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THE ECONOMIC JOURNAL

DECEMBER, 1948

THE PRICE SYSTEM.[1]

A YEAR ago, my predecessor in my present rôle, Professor Dennis Robertson, devoted most of his address to a review of the controversy which was then active about the potentialities of economic planning. I had made my own contribution to that controversy, the Rede lecture which I gave in Cambridge and which I was moved to write, partly by what seemed to me the incoherence of the planning ideology which was prevalent, and partly by the suspicion that planning appealed to many as having the properties of a magic charm which would enable us, not to solve, but to shirk our problems. Since then the ideologues of planning have remained mostly on the defensive, while their opponents, marching under the banner of a return to the price system, have launched a general assault. I had better confess at once that this revivalist ideology seems to me marked by the same defects which repelled me in planning ideology, that is to say, incoherence, and wishful thinking. The phrase "the price system" is bandied about as though its meaning were self-evident, and as though it, too, had the properties of a magic charm. I propose in this address to examine it closely; and in order to minimise the risk of misunderstanding, I begin with a recital of first principles.

In its most general sense the price system is an inevitable outcome of the use of money. Wherever goods and services are bought and sold for money, there must be prices; and these prices must always exert a powerful and pervasive influence. Price provides the principal criterion for resolving every problem of economic choice, both the problems of an individual arranging the distribution of his personal expenditure, and those of a manufacturer in organising his processes of production. Rationing and allocation schemes may narrow the area of choice, both for the consumer and for the producer; but where choice exists it is exercised by constant, if often tacit, reference to the price

[1] Presidential address delivered to Section F of the British Association for the Advancement of Science on September 10th, 1948, at Brighton.

criterion. In fact, the problems of choice which arise in ordinary private and business life, even in a highly controlled society, are very numerous; though they are nothing like as numerous as the problems which *might* arise, if they were not settled decisively, by a subconscious appeal to the price criterion, without, so to speak, coming into court. We do not actually have to worry our heads about replacing our china dinner service by more durable gold plate. Nor does a publisher have to spend a moment in considering whether to print his books on paper or on parchment. But, if there were no such things as prices, there would be an infinitude of such questions which someone would have to settle somehow.

The influence of the price system in this sense is far more pervasive than that of the profit motive. A private trader or manufacturer, operating in a highly competitive market, may be more vividly conscious of price considerations and more quickly responsive to them than the conductors of a publicly owned industry, but the latter do not and cannot leave them out of account. Their actions may diverge from those suggested by the price criterion, either from inattention or inertia, or because of decisions made deliberately for good reasons or bad. But in all their decisions, the price criterion is an essential factor. It is the needle which points out the course to follow where there is no reason to deviate from it. And here, too, the questions which call for deliberation are only a small fraction of those which escape attention because the answer given by the price criterion is categorical and obvious.

This then is the first proposition which I wish to emphasise: that even when our economic activities are subject to a multitude of physical controls, and even if most of our major industries were to be nationalised, the influence of the configuration of prices which exists at any time remains strong, far-reaching and fundamental. It is important, therefore, that this influence should be a healthy one, that the configuration of prices should be such as to pull in directions which accord with the public interest. The price criterion may work very badly, as we have plentiful present reasons to know, if the relations between different prices are, to use a common phrase, distorted. We want price relations that are right, so far as that object is attainable. Unquestionably, this desideratum was unduly neglected in our governmental policy a year or two ago. Indeed there seemed then to prevail in Ministerial circles a curious unwillingness to notice the influence of prices, an averting of the eyes

which was almost prudish, or perhaps it would be better to say, reminiscent of the mental habit of Mr. Podsnap: "the forces of the price system are un-socialist; therefore, we refuse to acknowledge their existence." They exist none the less for that; and it is always important to have them working for, and not against the public good.

Here, however, we must be careful not to beg a major question. In the matter of price relations, as in many others, it is easier to be sure that certain things are wrong than to know at all precisely what is right. In times of large-scale economic maladjustment, is there really such a thing as a right price for any commodity or service or factor of production; or are there merely widely separated limits within which the price should lie? If there is such a thing as a right price, how is it to be determined and established?

At this stage, I think I can most conveniently develop my argument by considering the answer that would be given to these questions by those whom I call for convenience, the ideologues of the price mechanism. In broad outline, their answer would be as follows: Trust to the forces of a free market, operating under conditions of effective competition, and with the minimum of interference by the State. The right price will then be secured by the interplay of demand and supply on price, and of price on demand and supply. This will be for any particular commodity the price at which demand and supply will be in equilibrium; and the establishment of equilibrium prices throughout the economic system will carry with it the corollary that the relative prices of different things will be right, in the sense that their pull will be in the directions that are needed for the most efficient use of the productive resources of society. Something of this sort is what is usually meant by those who call to-day for the restoration of the price system.

I have stated this view, of course, in a crude and summary form. Perhaps nobody would associate himself with it without adding various qualifications or reservations. All would concede that due allowance must be made for the so-called "wastes of competition." Some regard these wastes as comparatively unimportant, others as extremely important; and differences of judgment upon this matter form one element in controversies about nationalisation versus private enterprise. Again most economists would admit or affirm that large inequalities of income or wealth impair the claims that can be made for the results of a freely working economy; though those whom I call price-

system ideologues tend to repudiate the inference that this may justify such expedients as controls or rationing schemes, and to insist that the appropriate remedy is to do more than is done already to abate the inequalities of wealth by redistributive fiscal measures. I say no more about these qualifications or the issues which they raise, but pass to a large reservation which brings us much nearer to the questions which I wish to examine.

The strongest advocates of a free economy are nowadays increasingly inclined to concede that, before it can be expected to work well, a prior condition must first be satisfied. A rough adjustment must be established between aggregate supply and aggregate demand; otherwise a freely working economy may result in inflation, if demand is overstrong, or in a prolonged *malaise* of depression and unemployment if it is too weak. Now this is a considerable admission. First it implies that if aggregate demand and aggregate supply are out of balance, or at any rate, if aggregate demand is greatly in excess of aggregate supply, controls and allocation schemes may be needed after all. Second, it implies that one of the reasons why they may be needed is that otherwise the prices brought about by a freely working economy may be far from right. Third, it implies that the necessary equilibrium between aggregate demand and aggregate supply cannot itself be ensured by trusting to the automatic responses of a free economy. This task, it is recognised, can only be discharged by deliberate policy, perhaps taking the form of a budget surplus in some conditions and a budget deficit in others, perhaps extending to such matters as the rate of interest and the stimulation or restraint of capital investment; in any case deliberate State policy, which is thus assigned a positive rôle of key importance in the economic system. This takes us far from *laissez-faire*, a fact which most exponents of the views I am examining are eager to proclaim and to stress; for although eulogies of the price system and a free economy are again in fashion, the *laissez-faire* philosophy is not.

Without forgetting the qualifications mentioned earlier, we may therefore restate as follows the central prescription of price-system ideology: Let the State attend to the balance between aggregate demand and aggregate supply. Let it concentrate on that one all-important equation, and leave to the free play of impersonal economic forces all the detailed adjustments of the economic system. Let the State see to it that global equilibrium is established, and it need not worry about particular disequilibria. It can then leave the producer free to produce

what he chooses as he chooses, in response to the inducements and deterrents of the price system; and it can restore a similar freedom of choice to the consumer, including the choice between home-produced and imported goods.

I have cast this restatement in a topical form in which it makes a wide and growing appeal, and to judge from recent publications is especially attractive to economists. From different angles and with important individual variations Professor Jewkes, Mr. Harrod, Professor Meade and many others in this country and abroad, can be observed converging on the formula: "Equate aggregate demand to aggregate supply and set the price system free." Nor is this formula propounded on purely practical grounds. It is suggested that it represents the fruits of the latest developments in abstract economic thought, the distillation of the genius of Lord Keynes, a profoundly thought-out synthesis of new facts and the wisdom of the ages, appropriate to the conditions of our time. We badly need such a synthesis, I agree; but for my part I cannot find it in this formula.

Up to a point, undoubtedly, it seems well adapted to our present practical requirements in Great Britain. In my opinion at any rate, it is vitally important to eliminate the excess of overall demand in our internal economy. Such an excess, if long-continued, depletes the stocks of finished commodities, raw materials, components and spare parts, which represent the indispensable lubricant of a smoothly working economic system. It increases the difficulty of making an adequate volume of goods available for export. It entails an inflationary trend of prices and wage rates, and a constant danger that the momentum of this trend may at any time become uncontrollable. I have no doubt, therefore, as to the paramount practical importance of eliminating the excess of aggregate demand as speedily as possible. It would be most rash, I would add, to relax our efforts towards this end, until we are quite sure that it has been achieved. All this, however, leaves unanswered the pertinent questions why this excess of aggregate demand should have arisen and why it should be so very hard to get rid of it.

To continue the main argument, I hope and believe that the elimination of the general inflationary trend in our economy would carry with it the substantial elimination of many particular maladjustments, and would thus enable us to dispense with many of the controls that irk us to-day, and to simplify others. But would it enable us to remove them all? I do not believe it.

On the contrary, I am convinced that controls, that is to say, direct, physical controls, working otherwise than through the price system, will remain indispensable in some important sections of our economy. I have in mind, in particular, the regulation of long-term capital expenditure, which I expect will be desirable for a fairly considerable time, and the regulation of imports which I am certain will be necessary for a much longer time.

My dissent from the ideology I am examining goes much deeper than a distaste for what I am sure all sensible well-informed persons would agree with me in regarding as its over-sweeping claims in matters of practical policy. Its logical foundations seem to me unsound. The main idea on which it rests is the concept of an equilibrium price to be brought about by the forces of supply and demand. In times of large-scale economic maladjustment, this concept of an equilibrium price is, I submit, ambiguous. The theory of value comprises two parts, a short-term part and a long-term part, though as Alfred Marshall was careful to warn us " of course, there is no hard and sharp line of division between long and short periods." In the short run, the supply in any market may be taken as a more or less fixed quantity; and the equilibrium price is that which will so curtail an excessive demand, or so stimulate a deficient one, as to match the immediately available supply. In the long run, the supply of most things can be radically altered; and the equilibrium price is that which will evoke a rate of supply sufficient to meet the demand which will be forthcoming at that price. For a particular commodity, accordingly, the long-run equilibrium price[1] corresponds to the cost of producing it, including in that term a fair profit margin.

Now in ordinary times, when the economic system has not been subjected to any recent large disturbance, the short-term and long-term equilibrium prices of most things are seldom far apart; and any small difference between them resulting from some small maladjustment between supply and demand serves as an effective and comparatively unobjectionable means of correcting that maladjustment. If, for example, the demand for some particular commodity or material expands so as to outrun the current rate of production, the price tends to rise, production

[1] To avoid misunderstanding, it may be well to emphasise that by the phrase "long-term equilibrium price" I do not mean a forecast of what the price is likely to be in a distant future, but the price that is appropriate to current conditions on the basis of long-term equilibrium theory.

becomes more than usually profitable, and the rate of production is increased until it becomes sufficient to meet the enlarged demand. For this purpose, a very moderate rise of price will usually suffice; and a very moderate rise is all that usually occurs when times are what I have called ordinary, though there may be important exceptions even then. These are the conditions in which the price mechanism in a free economy works efficiently.

The story is apt to be very different when the maladjustments to be corrected are very large. If it is a case of a large excess of demand over supply, the short-term equilibrium price may be very high indeed, much higher than is useful in stimulating additional production. For an exorbitant price does not stimulate production appreciably more than a good price; it frequently stimulates it less. Indeed it is a well-established paradox that an excessive price sometimes leads to a decline in output, because many classes of producers are disposed to work less hard when an accustomed income can be earned with less exertion. On the other hand, the disadvantages of an exorbitant price, or in more popular language, a profiteering price, may be very great.

Not that I wish to suggest that in the absence of controls a large excess of demand over supply will always lead to a price that is grossly in excess of costs of production. The actual price in such conditions will depend largely on the type of market in which the commodity is bought and sold. It will come near to the short-term equilibrium price for those things which are sold on organised exchanges, as are normally most staple agricultural commodities. But for goods which are produced to fulfil orders as are most industrial products, the prices at which the orders are placed usually represent some sort of compromise between those which might result from a free auction on the one hand and the costs of production on the other; a compromise in other words between the short-term and the long-term equilibrium prices. The character of the compromise varies from one type of commodity to another. It is useful to note in passing that the deviation of price from the norm set by costs of production is usually least when the price is fixed by the unilateral decision of the producer, as it is for branded goods, that is to say where competition is most imperfect. It is not monopoly but competition which forces up prices most in conditions of shortage.

It is a mistake, therefore, to suppose that in such conditions the theoretical short-term equilibrium price is either what we want, or what we normally get in a free economy; or that relative

prices would be "right" if the State did not interfere with them by controls and subsidies. The paradox that the prices of second-hand motor cars are often a good deal higher than the prices of new cars of the same makes can be observed to-day in the United States, no less than in Great Britain. This matters little, but it illustrates the anomalies that are apt to occur in price relations when shortages are widespread. Some of these anomalies do matter; and it is important to limit their growth. Unless we are to go out of our way to force up the less volatile prices to profiteering heights, this means that we must keep down the more volatile by appropriate restraints. Prices fail, in these circumstances, to discharge the function of lopping-off excess demand; and problems of allocation must be dealt with by other means or left unsolved.

It is true that shortages or surpluses are apt to be most widespread, and the consequential anomalies most serious, when there is a large maladjustment between aggregate demand and aggregate supply. But it is not true that the former disequilibria are always a mere by-product of the latter. They may sometimes have a common origin, as in the great economic disturbance caused by a major war; they may sometimes arise independently; or the relation between cause and effect may be the other way round, for sometimes particular maladjustments may play a big part, as I believe they do now, in causing or maintaining a maladjustment between aggregate supply and aggregate demand. However this may be, particular maladjustments of large magnitude and crucial importance may remain, after global equilibrium has been restored. Wherever such maladjustments exist, the short-term equilibrium price may diverge widely from the long-term equilibrium price; and real difficulties and problems may arise, for which the ordinary price mechanism affords no adequate solution.

These are the generalities which seem to be relevant. I am conscious that they come very near to being platitudes which it should not be necessary to labour at such length. I have felt impelled to stress them by the fact that they are so completely, and sometimes it seems so perversely, ignored in current price-system ideology. I pass now to consider their bearing on the most formidable of all our national economic problems—the large and persistent deficit in our balance of international payments.

Is there really any reasonable prospect that the restoration of balance between aggregate demand and aggregate supply

in our internal economy would enable us to entrust our external economy to the price mechanism, that is to say, to remove restrictions upon imports, including imports from dollar or other hard currency sources? Is this even conceivable, so long as the prices of the foldstuffs and raw materials which we have to import are as high as they are to-day? The question is one which we are in a fair position to judge; for though we have not yet eliminated the excess of aggregate demand in our internal economy, we are not, I hope, very far now from doing so. The progress we have made in this matter has not, however, brought us within sight of closing the deficit in our balance of external payments. Even the target laid down in the Economic Survey for 1948 went no further than a reduction of this deficit to £250 millions in the present year; and in the light of what happened since, there is little chance that that target will be hit.

We are running a formidable deficit in this vital sector of our economy despite the fact that our total volume of imports is held down by means of an austere programme of import restrictions to about 80 per cent. of the pre-war level, and despite the fact that our commodity exports are considerably larger in volume than before the war, let us say by about one-quarter. Additional exports normally require additional imports of raw materials. Accordingly, the volume of imports available to satisfy the needs of our resident population is probably appreciably less than 80 per cent. of the pre-war volume, although this population is more numerous than it was. On the other hand, our consumption of goods and services as a whole, though its exact rate is a matter of some abstruse controversy, cannot reasonably be put much lower than before the war, at any rate when capital goods are included, as it is right to include them for the present argument. So we have the contrast: consumption of imported goods less than 80 per cent. of pre-war, total consumption about 100 per cent. of pre-war.

If the consuming public, together with manufacturers and traders, were free to choose between home-produced and imported goods, there is no reason to suppose that imported goods would represent a smaller fraction of their total purchases than formerly. It is true that in the absence of subsidies imported goods would have risen more in price. Against this, however, must be set the re-distribution of net income in favour of the lower income-groups, who spend a smaller part of their income than others on services, and a larger part on commodities from overseas. If, therefore, import restrictions were removed,

it would seem only reasonable to expect that the volume of relevant imports would return from less than 80 per cent. to about 100 per cent. of the pre-war level, an increase of more than a quarter. At present prices, which might of course be increased by additional purchases, this would add over £400 millions to our national import-bill.

How would this result be affected by the definite removal of every vestige of inflation? This might serve to reduce our aggregate consumption somewhat, and the demand for imports correspondingly. Conceivably, our aggregate consumption may have to be reduced, failing a sufficient further increase in output. But no one, I imagine, would suggest, least of all the critics of austerity, that our aggregate consumption of goods and services may have to be reduced by 20 per cent. or more. This is the magnitude of the reduction that would be needed, if the removal of import restrictions were not to result in increased expenditure on imported goods.

It may be hoped that the elimination of excess demand will also help to increase our exports. That is one of the many reasons why it is so important to eliminate this excess. But we need a large increase in our export receipts in order to close the existing deficit in our balance of payments, which Marshall Aid is not enough to cover; and when Marshall aid runs out we shall need in addition all the reduction in import prices for which we can fairly hope. In the meantime, we are in no position to contemplate a largely increased expenditure on imports. We have to keep our imports down and get our exports up as well. I cannot gainsay anyone who complains that once again I am labouring the obvious. I observe only that this disposes of the doctrine that if we re-establish global equilibrium we can leave the balance of payments to take care of itself.

The locker of price-system ideology contains, it is true, another shot. This is the idea that disequilibria in the balance of payments can always be corrected by variations in foreign-exchange rates, though opinions differ widely as to how this idea should be applied. Professor Jewkes, in his *Ordeal by Planning*, argues that the level of exchange rates should be left to the free play of supply and demand in foreign-exchange markets. Indeed, he seems to regard the fixing of even tentative exchange parities as constituting in itself an illegitimate interference with the price mechanism.[1]

[1] "What would have happened in the free economy? The State would have confined itself to its legitimate rôle of restricting the volume of money

In this, however, I think he is exceptional; and a more prevalent view is that exchange parities should be altered from time to time as a means of correcting balance of payments disequilibria. Those who hold this view are not all of one mind as to whether the pound sterling should be devalued in Great Britain at the present time. Some appear to advocate this course, or at any rate did so about a year ago; for on this matter minds not only differ but are apt to change. Professor Meade, in his inaugural lecture at the London School of Economics, expressly disclaims this proposition, and declares himself uncertain whether devaluation will eventually be needed. But he joins with the others in insisting that devaluation, in contradistinction to import restrictions, is the right remedy for our balance of payments difficulties, if they should prove obstinate. On the other hand, Professor Hawtrey, whom I think it is fair to class as a price-system ideologue, though of a highly individual type, urges the opposite course, the raising of our exchange-rate with the dollar, on the ground that the pound is at present under-valued by reference to relative price-levels, and that this gives us bad terms of trade and acts as an inflationary force.

I cannot attempt in this address a full examination of these diverse views. But I point to their diversity to illustrate my central theme. The ardent advocacy of exchange depreciation in the abstract, in which most price-system ideologues indulge, is attributable to the pivotal rôle which they assign to the concept of equilibrium price. There *must* be, they believe, some equilibrium rate of exchange which would equate the supply of and the demand for dollars. I reply that when our import–export balance is so far from adjustment, there is a huge divergence between the theoretical short-term equilibrium rate and the theoretical long-term rate. The former is that at which the demand for foreign exchange would be in balance with the supply accruing from business transactions. The relevant long-term norm for the exchange rate between two currencies,

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sufficiently to prevent domestic inflation. Exports would have been stimulated because that would have been the only outlet for goods. The cramping effect upon industry of physical controls would have been avoided. No export targets would have been fixed, exports would have been left to find their own level. The long-period exchange rate would have been left to determine itself. A deficit in the balance of payments would have been met by a fall in the exchange rate, thus increasing exports and reducing imports. If the nation was living at a level beyond its means, the fact would have been immediately signalled to all and the increase in domestic prices would have pressed down the standard of living to what was possible." Jewkes, *Ordeal by Planning*, p. 234.

corresponding to the cost of production as the long-term norm for the price of a commodity, is, to use the phrase coined in the last post-war period by Professor Cassel, their purchasing power parity; not, of course, that that is likely to remain constant in unstable times any more than the cost of producing a commodity remains constant.

It is to this norm that Professor Hawtrey appeals in maintaining that sterling is too low relatively to the dollar. I am not quite sure that he is right in maintaining this; subsidised prices and changes in relative productivity make the relevant price-level calculations a treacherous bog. But he may be right, or the trend of relative costs may soon make him right. If so, I infer that our exchange rate is about where it ought to be. For the price prescription which I offer for conditions of serious maladjustment is that the price should deviate from the long-term norm in the direction of the short-term equilibrium price, but only by a narrow angle.

It is important that the angle should be small. Just as an exorbitant price is seldom more effective than a good price in stimulating the output of a commodity, and may sometimes even lower it, so an exchange rate which is far below purchasing-power parity is seldom more effective than one which is only slightly below this norm in improving the balance of payments of a country in deficit, and may even worsen it. It would be foolish therefore, and possibly disastrous, to try to make actual rates of exchange correspond to the short-term equilibrium rates, when these would be far below current purchasing-power parities. This is not a matter of *a priori* dogmatism. It is the principal lesson which was taught, even if we have failed to learn it, by the runaway currency inflations on the Continent of Europe in the 1920s. A marked and almost invariable feature of these inflations was that exchange depreciation in the country concerned moved far ahead of the rise in internal prices, so that the deterrent to imports and the stimulus to exports were as strong as any price-system ideologue could possibly desire. Yet the balance of payments was normally worsened, because the effect on the terms of trade outweighed the effect on the relative volumes of imports and exports.

The inflationary process was therefore cumulative. The rise in internal prices, though never catching up with the external depreciation, at least until the final stages, was always hurrying after it. It proved difficult to balance budgets in such conditions; and the process continued until eventually it was ended, whether

before or after it had culminated in a complete *dégringolade*, by applying what came to be recognised as the indispensable remedy. This was to hold the foreign-exchange rates firmly for a period by means of foreign credits or the free use of the country's own gold reserves at a level in the neighbourhood of the purchasing-power parity. So only could the breathing-space be secured in which any other measures that might be needed for stabilisation could take effect.

These things happened in the days of unrestricted foreign-exchange markets, when individuals were free to put their money abroad. This freedom, by the way, was regarded then, and indeed right up to 1939, as an essential feature of a free economy. Now that capital movements are tightly controlled in most countries, it is unlikely that an inflationary movement would conform to the model of the 1920s in all respects. On the essential point, however, of the capacity of exchange depreciation to improve a country's balance of payments, this experience is extremely pertinent. If contemporary experience is preferred, the large and rapid increase in French prices which followed the devaluation of the franc in January 1948 is equally apposite. British economists, I suggest, would do better to heed these lessons than to bandy calculations in terms of elasticities conceived as quasi-constant ratios, capable of measurement. In effect, all such calculations beg the crucial questions at issue, taking for granted first that a country can push exchange depreciation to any degree desired without affecting its internal price-level, and second that the effect on the balance of payments, assuming this to be favourable, will increase without limit with the degree of the depreciation.

I submit, then, that for correcting a huge maladjustment in the balance of payments, such as still confronts Great Britain, counter-inflationary financial measures, though helpful, cannot suffice; and that exchange-rate variations might be harmful. It is essential to keep down the volume of our import purchases as effectively as we now do by means of import restrictions. And not only to keep down their total volume, but more particularly that part of them that comes from what we call hard-currency sources. The principle of non-discrimination does not fit a world in which the whole international balance of payments has been upset.

There remains another aspect of the problem to which I should refer. Might not the necessary limitation of our import expenditure be secured by means more conformable, as the

phrase goes, to the price mechanism than quantitative import regulation; for example, by high tariffs or by the auctioning of import licences, as Professor Meade persistently suggests? My answer is, where we are free to choose, that that method should be chosen which will secure its object most simply and most effectively. For some commodities, duties are unquestionably the most appropriate form of import limitation, notably for tobacco where the objects are mixed, and the indirect saving of dollars through the raising of revenue may well predominate over the direct saving accruing from a cut in purchases. But many of our import restrictions are prohibitions, complete or nearly so, at least on imports from particular countries. Nothing would be gained, not even a saving of administrative costs, by replacing these prohibitions by duties designed to be prohibitive. Here the quantitative method is simpler, more straightforward and more certainly effective. For other commodities it may be important to avoid raising prices to the home consumer. Again, a large part of our imports is purchased at present directly by the State, and here manifestly it is impossible to evade the quantitative question, how much the State should buy.

The principle that I have suggested applies, of course, more widely. Wherever the need for effective regulation is made out, the question of the best method to employ should be settled on merits, in the light of the relevant circumstances, and not by ideological prepossessions, either for the price system or against it. Quantitative controls, allocation schemes and the like are crude and clumsy instruments, which it is absurd to idealise. My own experience confirms the lively account which Professor Jewkes gives of the lengthy administrative process of quite unscientific haggling by which allocation schemes are apt to be constructed. But it must not be supposed that there are no defects in the so-called financial controls which some prefer. When, for example, it is suggested that the need to ration scarce essential commodities might be averted by re-distributing purchasing-power by really drastic fiscal measures, it is well to remember that taxes have their disadvantages and sometimes arouse criticism, that their incidence is not always just or scientific, and that officials have to be employed to assess and to collect them.

The same scheme of analysis which I have applied to foreign-exchange rates and the balance of payments can be applied with appropriate modifications to the rate of interest and the balance between savings and investment. During the war, the production

of capital goods for peace-time purposes was virtually suspended; consequently, the current demand for such goods is abnormally high. On the other hand, for various reasons the current rate of private saving is abnormally low. In these circumstances, an extremely high rate of interest might be needed to equate the rate of real investment to the rate of saving, if the demand for capital goods were uncontrolled. There is, therefore, a strong case for regulating this demand. The inter-relations of the capital market and the monetary system introduce many complications; and I cannot pursue this subject further in this address. It is worth noting, however, that modern economic thought, over-impressed as I think by these complications, is inclined on this matter to abandon the notion of an equilibrium price altogether. It has been suggested that there are no limits, set by underlying economic forces, to the power of governments and monetary authorities to manipulate interest rates. This palpable exaggeration, as I have always thought it, served to encourage Mr. Dalton in the mistake which he undoubtedly made in carrying the cheap-money policy to excessive lengths. The mistake lay in trying to force interest rates down below the long-term norm.

I have concentrated in this address on what I may call the mechanics of the economic problem. My main theme can be summed up in two short propositions; first that, in conditions of large-scale maladjustment, the optimum price is to be found, as a rule, between the long-term norm and the short-term equilibrium price, but lies much nearer to the former; second, that in such conditions, regulation and deliberate direction may be useful and sometimes indispensable. To anyone concerned in a responsible capacity with the actual problems that arise, the latter proposition at least is obvious common sense. I deplore the fact that it is necessary to argue it among professional economists. A century ago economists were laughed at as the practitioners of the dismal science. They scarcely deserve that taunt, or should I say that compliment, to-day. I fear it must be recorded that during a period in which the British people have been faced with most formidable economic difficulties, to surmount which it is important above all else to appreciate the magnitude of the effort required, the most extravagant propagandists of go-easy illusions, the most pushing salesmen of enervating Fool's Paradises, have been found among economists of diverse schools of thought. We have now, I hope, done with the illusion that a much better time could be had quite easily by

all if only industry were mobilised for national purposes, as it was to produce Fido, and Pluto and Mulberry. It would be no improvement to replace this by the illusion that our present austerities are unnecessary, and would vanish like the snow if the sun of the price system were allowed to shine.

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NATIONAL INCOME, NATIONAL EXPENDITURE AND THE BALANCE OF PAYMENTS.[1] PART I

I. The Limitations of "Multiplier" Technique

This article has a very limited purpose. It seeks to elucidate certain relationships between the national income, the national expenditure and the balance of payments on the assumption that all domestic and foreign money prices and all rates of foreign exchange remain constant. That is to say, it deals with the effects which a change in the balance of payments may have on the national income and expenditure, and with the effects which a change in the national income and expenditure may have on the balance of payments, if we abstract from the substitution effects of changes in the relative prices of various goods and services. This article, in other words, assumes away all equilibrating mechanisms due to changes in the international flow of capital resulting from variations in relative rates of interest, or changes in the flow of international trade resulting from variations in exchange rates or in domestic wage rates and prices. It assumes that if the national income is changed as a result of a change in the domestic or foreign demand for a country's produce, then output and employment are changed *pro rata* and all money prices remain unchanged. It investigates the effects only of changes of this type.

"Multiplier" analysis of this type is, of course, very strictly limited. It should never be used alone as a basis for prescription of policy in the real world. Nevertheless it has some use. Provided that its limitations are carefully remembered, it is a useful preliminary analytical device, in that it can isolate for explanation certain of the basic forces which are at work and which must be understood before the working of the whole system can be comprehended. "Models" of the balance of payments can be later developed which, while they make room also for the effects of changes in relative prices, still contain the basic "multiplier" relationships which it is the purpose of this article to investigate.

[1] This article was written largely as a by-product of work which I am doing under the auspices of the Royal Institute of International Affairs in preparing a volume on "International Economic Policy."

II. Three Basic Forms of Disturbance

In what follows we shall confine our attention to the balance of payments between one country (which we shall call country A) and the rest of the world (which we shall call country B). We start in a position of rest. Some " primary " or " spontaneous " disturbance occurs; and we then ask what is the final effect on the balance of payments between country A and country B and on the national incomes of countries A and B when this " primary " or " spontaneous " disturbance has worked out all its secondary " multiplier " effects upon both countries' income, expenditure, imports and exports.

We shall, in fact, attempt to find the answers (always on the basis of our simplifying " multiplier " assumptions) to many questions concerning many kinds of international disequilibrium; but these questions can all be resolved into questions about three basic types of " primary " or " spontaneous " disturbing forces, though these may take different particular forms and may be combined in different ways.

(i) The first basic type of " primary " disturbance is some internal change in the level of a country's effective demand for goods and services which is associated with the given level of national income in that country. (ii) The second basic type of " primary " disturbance is a shift, within the given level of effective demand, from the goods and services produced by one of the two countries to the goods and services produced by the other—a shift which may occur in either or both of the two countries concerned. (iii) The third basic type of " primary " disturbance is some change in the amount of money transferred from one country to another not in payment for an increased demand for goods and services, *e.g.*, an increased lending or an increased reparations payment by one country to another. Let us consider each of these types of " primary " disturbance in turn.

(i) The general level of a country's demand for goods and services which is associated with a given level of national income in that country may change for a number of reasons. People may decide to save less and spend more of their incomes on goods and services for personal consumption; the State may reduce taxation (without reducing its public expenditure) so as to leave persons with a larger tax-free income to spend on goods and services for personal consumption; the State may, without raising taxation or reducing the spendable incomes of others, itself spend more on goods and services for current State purposes or in prosecution of

a larger public-investment programme; or private investment, *i.e.*, expenditure on goods and services by private enterprise for purposes of capital development, may increase because of some favourable change in the capital market (*e.g.*, an expansionist banking policy leading to lower rates of interest) or because of an improved expectation of the yield to be reaped on capital development. For any of these reasons the demand for goods and services for domestic purposes (*i.e.*, for personal consumption, for public consumption, for private or public investment) may show a "spontaneous" primary change. In what follows we shall call the domestic demand for goods and services used for current consumption by persons or by public authorities or for domestic capital construction by private or public concerns "domestic expenditure"; and we shall talk of a "spontaneous change in domestic expenditure" when some such change as those enumerated above occurs so as to raise or lower the level of domestic expenditure which is associated with any given national income.

(ii) Now it is to be observed that "domestic expenditure" is *not* expenditure on domestically produced goods and services. It is expenditure on goods and services, whether produced at home or abroad, for the satisfaction of domestic consumption or domestic investment whether private or public. Having decided how much to spend for such purposes out of any given national income, the next decision is how much of this "domestic expenditure" should be spent on home-produced goods and services and how much on imports. We shall speak of a given "propensity to import" as relating the total of imports to any given total of domestic expenditure. There is a "spontaneous change in imports" when this propensity alters and when there is a change in the level of imports associated with any given level of total domestic expenditure. Such a "spontaneous change in imports" in either country is the second basic type of disturbance.

(iii) There remains the third basic type of primary disturbance. Country A lends more to country B or has to pay increased reparations to country B. This will have no direct effect upon the balance of trade [1] of country A (though it will, of course, have a direct effect upon country A's total balance of payments including the loan or other financial transfer) unless it directly or indirectly causes a change in the demand for country A's or for country B's goods. In the "pure" case of this type of "spon-

[1] In what follows by the balance of trade we shall mean the balance of all current payments (*i.e.*, for visible and invisible trade).

taneous " disturbance there is no " spontaneous " change either in domestic expenditure or in imports in either country. All we have to deal with as the " primary " or " spontaneous " cause of trouble is an increased transfer from country A to country B, causing a corresponding loss of monetary reserves from country A to country B.

But many disturbing occurrences which we shall wish to examine can be handled only as instances of combinations of these three " pure " types. A few examples may serve to illustrate the many possibilities.

In the first place, country A may impose an import duty which both reduces its demand for imports and also raises an increased revenue for its State budget. If this increased revenue were added to the budget surplus it would cause a reduced demand for goods and services at factor cost out of any given national income. Such an occurrence would be a combination of disturbing forces Nos. (i) and (ii) above. It would represent a " spontaneous " reduction in imports and a simultaneous " spontaneous " reduction in total domestic expenditure at factor cost.

A second example would be afforded by an improvement in the investment prospects in country B which not only caused a " spontaneous " increase in the domestic demand of country B for the goods and services needed to carry out a larger investment programme but also attracted a larger flow of lending from country A to country B to take advantage of the increased opportunities of profit in country B. Such an occurrence would represent a combination of primary disturbances (i) and (iii).

A third example would be afforded by the payment of reparations from country A to country B. There would be a " spontaneous " increase in this form of financial transfer to be made from A to B. But the raising of tax revenue in A to acquire the funds to pay to B, and the tax remissions which might occur in B as the reparations were received into B's budget, would cause a simultaneous increase in A's, and decrease in B's, domestic expenditure by the taxpayers. There would thus be " spontaneous " changes in both countries' domestic expenditures concurrently with the " spontaneous " change in financial transfer between them.

III. Three Basic Forms of Domestic Economy

We have defined what we mean by the " primary " or " spontaneous " changes in a country's domestic expenditure, imports or lending (or similar financial transfers) which will form the

starting-points of the developments which we wish to examine. These "primary" changes will be followed by certain "secondary" changes in domestic expenditure, imports or lending in the two countries.

We must now examine these secondary changes. They fall into two classes which we shall call, respectively, "induced" changes and "policy" changes in domestic expenditure, imports and lending. The "induced" changes do not at this stage require much explanation. The general repercussions following any given "spontaneous" change may cause a country's national income to rise or to fall. But a change in the national income is likely itself to "induce" a change in domestic expenditure and thereby to "induce" a change in imports. For example, when income rises persons and institutions are likely to increase their demand for goods and services and, among such goods, for imported goods and services. Such increases (or decreases) in domestic expenditure and in imports as occur simply because the national income has risen (or fallen) we will call "induced" increases (or decreases) in domestic expenditure and imports.

There may similarly be induced changes in foreign lending. An increase in country A's income will mean an increase in her savings. There may be some increased lending abroad by A simply because A has a larger volume of savings from which to lend at home or abroad. On the other hand, the increase in country A's national income may increase the prospect of profit in A's industries and so reduce the incentive for savers in A to lend to B and increase the incentive for savers in B to lend to A. The net change in A's lending abroad which was due to the sum of these two influences (and which might, therefore, be positive or negative) would represent country A's net "induced" foreign lending.

But there is another class of secondary changes in domestic expenditure, imports or lending. We shall not assume throughout our analysis that the Government or the monetary authorities of each country adopt a purely passive rôle when a "spontaneous" change occurs. The authorities may themselves cause changes (which we will call "policy" changes) in domestic expenditure or imports, in order to offset certain of the effects of the "spontaneous" changes. There are three main types of "policy" reaction to such "spontaneous" changes.

First, the authorities in the affected country may take no conscious measures to adapt the level of its own domestic expenditure or imports to the changed conditions. On our strict assump-

tions that all prices and wage-rates are constant, a " spontaneous " decline in its own domestic demand for its own products or in the external demand for its exports would cause a decline in its production and employment and a decline in the value of its national product (*i.e.*, in its national income). This would then have " multiplier " effects leading to a further decline in national income and employment. Similarly, a " spontaneous " increase in the internal or external demand for its products would lead to increases in its employment, national production and national income. A " spontaneous " decline in the demand for its products would thus lead to increased unemployment in the country in question; and a " spontaneous " rise in the demand for its products would lead to reduced unemployment in the affected country.[1] We call such an economy a Neutral Economy.

Secondly, the authorities in the affected country may take domestic measures so to control its total domestic expenditure or, within that total, its demand for imports that the total demand for its own produce is kept in a nice balance with its total potential production. In this case, if there is a " spontaneous " decline in the internal or external demand for its products, the authorities in the affected country will take measures (*e.g.*, by an intensified public-works programme or by a reduction in taxation which stimulates personal demand for consumption or by a restriction of imports which diverts demand on to home-produced goods) to bring about such a " policy " increase in the demand for its products that there is no net decline in the total demand for its products. It has a conscious " Full Employment " policy aimed at stabilising the total demand for its production and so the total value of its national income. We will call it an Internally Balanced Economy.

Thirdly, the authorities in the affected country may take measures so to control its total domestic demand for goods and services or, within that total, its demand for foreign goods that the excess of its imports over its exports is kept equal to the net lending or similar financial transfers of the rest of the world to it. In this case if there is a decline in the external demand for its exports or an increased net lending to foreign countries, the authorities in the affected country will take measures (*e.g.*, by a

[1] In order that the expansionist effects of a " spontaneous " increase in the demand for its products may have their full " multiplier " effects in increasing the national income and expenditure without leading to any rise in prices (*i.e.*, consistently with our underlying assumption of constant prices) we must assume that the economy starts off with a sufficient volume of unemployment to meet the full effects of any " spontaneous " increase in the demand for its products.

reduced expenditure on public works or by a rise in taxation which reduces the personal demand for consumption goods or by a restriction on imports) to bring about a "policy" reduction in its imports as great as the fall in its exports or the increased net lending abroad. Such a country maintains a constant equilibrium in its balance of payments regardless of the consequential changes in the level of its own national income. We will call it an Externally Balanced Economy.

In the case of Neutral Economies and Internally Balanced Economies a primary disturbance may well leave the country with a balance-of-payments disequilibrium. For example, a primary increase in domestic expenditure in country A may so stimulate its demand for imports that it has an excess of imports which cannot be financed by any increase in the normal lending to it by country B. The disturbance will have led to a net unfavourable movement in country A's balance of payments with country B, counting in that balance both its net excess of exports to B and its net excess of normal borrowing (or other transfer receipts) from B. The change in a country's balance of payments in this sense is one of the things which we desire to examine. Such a balance can be financed in either of two ways: by the use of monetary reserves or other special funds by the monetary authorities, or else by means of exchange controls over capital movements which prevent the outflow of "normal" capital funds from being as large as they otherwise would. The size of the increase in a country's total adverse balance of payments will thus measure the extent to which that country must rely either on the use of monetary reserves or on the control of capital movements to finance its payments with the rest of the world.

IV. The Purpose of the Succeeding Analysis

We have now the following four forms of "spontaneous" change, which may occur alone or in various combinations:—

(i) a "spontaneous" change in A's domestic expenditure;
(ii) a "spontaneous" change in B's domestic expenditure;
(iii) a "spontaneous" shift of demand in either or both countries from A's goods to B's goods and vice versa; and
(iv) a "spontaneous" change in the net amount of normal lending or other transfers from A to B.

We wish to examine the ultimate effect of these changes on the following eight variables:—

(i) A's national income;
(ii) B's national income;

(iii) the " policy " changes which A must initiate in her domestic expenditure or

(iv) in her imports to maintain Internal or External Balance;

(v) the " policy " changes which B must initiate in her domestic expenditure or

(vi) in her imports to maintain her economy in Internal or External Balance;

(vii) the balance of trade between A and B; and

(viii) the balance of payments (*i.e.*, balance of trade less net lending or other similar transfers) between A and B.

This analysis we must carry out on the following nine " policy " assumptions :—

(i) both A and B may have Neutral Economies;

(ii) A may have a Neutral and B an Internally Balanced Economy;

(iii) A may have a Neutral and B an Externally Balanced Economy;

(iv) A may have an Internally Balanced and B a Neutral Economy;

(v) both A and B may have Internally Balanced Economies;

(vi) A may have an Internally Balanced and B an Externally Balanced Economy;

(vii) A may have an Externally Balanced and B a Neutral Economy;

(viii) A may have an Externally Balanced and B an Internally Balanced Economy; and

(ix) both A and B may have Externally Balanced Economies.

V. The Underlying Equations

The following set of equations represents the fundamental relationships for our two countries A and B :—

$$Y_a = D_a + T \quad . \quad . \quad (1a)$$

$$Y_b = D_b - T \quad . \quad . \quad (1b)$$

$$D_a = D_{as} + D_{ap} + D_{ai} \quad . \quad (2a)$$

$$D_b = D_{bs} + D_{bp} + D_{bi} \quad . \quad (2b)$$

$$T = -I_a + I_b \quad . \quad . \quad (3)$$

$$I_a = I_{as} + I_{ap} + I_{ai} \quad . \quad (4a)$$

$$I_b = I_{bs} + I_{bp} + I_{bi} \quad . \quad (4b)$$

$$L = L_s + L_{ai} - L_{bi} \quad . \quad (5)$$

$$P = T - L \quad . \quad . \quad (6)$$

$$D_{ai} = (1 - \lambda_a)Y_a \quad . \quad (7a)$$

$$D_{bi} = (1 - \lambda_b)Y_b \quad . \quad (7b)$$

$$I_{ai} = \pi_a(1 - \lambda_a)Y_a \quad . \quad (8a)$$

$$I_{bi} = \pi_b(1 - \lambda_b)Y_b \quad . \quad (8b)$$

$$L_{ai} = \gamma_a Y_a \quad . \quad . \quad . \quad (9a)$$

$$L_{bi} = \gamma_b Y_b \quad . \quad . \quad . \quad (9b)$$

$$\pi_{as} = \frac{I_{as}}{D_{as}} \quad . \quad . \quad . \quad (10a)$$

$$\pi_{bs} = \frac{I_{bs}}{D_{bs}} \quad . \quad . \quad . \quad (10b)$$

$$\pi_{ap} = \frac{I_{ap}}{D_{ap}} \quad . \quad . \quad . \quad (11a)$$

$$\pi_{bp} = \frac{I_{bp}}{D_{bp}} \quad . \quad . \quad . \quad (11b)$$

In these equations the subscript a refers the quantity concerned to country A and the subscript b to country B. The subscripts s, p and i respectively refer to a "spontaneous," "policy" or "induced" change in the quantity. Each of the quantities Y, D, I, L, T and P refers to a small increment in a basic quantity, thus Y denotes a small increment in national income, D a small increment in domestic expenditure, I a small increase in imports, L a small increase in lending by A to B, T a small increment in the balance of trade and P a small increment in the total balance of payments of country A with country B. Thus D_{as} denotes a "spontaneous" increase in country A's domestic expenditure.

Equations (1a) and (1b) express the basic relationship between the national income and national expenditure of any country. An increase in country A's national income (Y_a) can be generated only by an increase in the demand for its products. This increase in the demand for its products is analysed in the two terms D_a and T. D_a represents the total ("spontaneous," "policy" and "induced") increase in country A's domestic expenditure (*i.e.*, in the country's demand for goods and services, whether home-produced or imported, which are needed for personal and public consumption and for private and public investment). From this we must deduct imports, since the increment of domestic expenditure (D_a) includes the increased demand for imports which does not generate increased income at home. To it we must add the value of exports, since the foreign demand for the country's goods and services helps to generate its national income, and this foreign demand has not been included in the increment of domestic expenditure (D_a). But T is the total increment in the country's balance of trade, *i.e.*, the increment in its visible and invisible exports minus the increment in its visible and invisible imports. It follows that $D_a + T$ represents the total increment in the demand for the country's produce, and thus is equal to Y_a, the increment in its national income.[1]

[1] A simplification has been made to the relationship $Y = D + T$ through the elimination of a term for indirect taxes and subsidies. Y is the national income at factor cost, since in what follows this is the term which is assumed to be stabilised in order to provide Full Employment. Any net indirect taxes less subsidies must, therefore, have been deducted from the right-hand side of the equation. In so far as indirect taxes are levied on (or subsidies paid in respect of) goods and services, whether home-produced or imported, which are included in domestic expenditure (D), there is no difficulty. Domestic expenditure is reckoned at factor cost (*i.e.*, after deduction of indirect taxes and addition of subsidies) and is so treated in what follows. But in so far as indirect taxes or subsidies relate to exports there is a difficulty. In order that T should measure the balance of current payments, exports must be reckoned at market prices,

Similarly, $Y_b = D_b - T$, since T, which represents the increment of country A's exports minus the increment of country A's imports, equals the increment of country B's imports minus the increment of country B's exports.

Equations (2*a*) and (2*b*) merely express the fact that the total increment of domestic expenditure in each country (*e.g.*, D_a in country A) is equal to the sum of the "spontaneous" (D_{as}), the "policy" (D_{ap}) and the "induced" (D_{ai}) increment of domestic expenditure.

Equation (3) expresses the fact that the increment of country A's balance of the visible and invisible trade (T) is equal to the increase in country A's exports (*i.e.*, I_b, the increase in country B's imports) less the increase in country A's imports (I_a).

Equations (4*a*) and (4*b*) show that each country's increment of imports (*i.e.*, I_a in the case of country A) is made up of the sum of the "spontaneous" (I_{as}), the "policy" (I_{ap}) and the "induced" (I_{ai}) increases of imports.

Equation (5) shows that the total increase in the normal lending or other financial transfers from A to B is made up of the net "spontaneous" increase in financial transfers from A to B (L_s), plus any net increase in "induced" transfers from A to B (L_{ai}) induced by a rise in A's national income, minus any net increase in "induced" "transfers" from B to A (L_{bi}), induced by a rise in B's national income.

Equation (6) shows that the net favourable movement in country A's overall balance of payments (P) is the improvement in her balance of trade (T) less any net increase in her "normal" lending or other financial transfers to B (L).

Equations (7), (8) and (9) express certain structural relationships and we must spend rather more time over them.

Equations (7*a*) and (7*b*) express the "induced" increase in a country's domestic expenditure (*e.g.*, D_{ai}) as dependent upon the increment in that country's national income (Y_a) and the propensity (λ_a) of that increment of income to leak away and not to cause any increment of domestic expenditure. A rise in the national income (Y_a) will itself induce some increase in domestic expenditure (D_{ai}), but not, probably, an exactly equivalent increase. Some part (λ_a) of the increased national income will leak away in the form of tax payments, increased savings and the

i.e., at what the foreigner pays for our goods. This, however, differs from the contribution of exports to the generation of the national income (Y) by the indirect taxes or subsidies which relate to exports. For the present purpose we merely assume no indirect taxes or subsidies on exports.

like and only the remainder $(1 - \lambda_a)$ will cause an increase in the demand for goods and services.

The increased demand for goods and services $(1 - \lambda_a)Y_a$ may take any of three forms: an increase in the demand for goods and services for personal consumption due to the fact that consumers have larger incomes to spend; an increased demand for goods and services by the public authorities, caused by the improved budgetary position which the increase in the national income will bring with it; and finally, an increase in the demand for capital goods for purposes of home investment due to the fact that the expectation of profit on home production has been improved by that increased demand for home-produced goods and services which itself generated the increase in the national income. Let us write

$$1 - \lambda = c_1 + c_2 + c_3$$

where c_1 = the proportion of any increase in the national income which causes an increase in the demand for goods and services for personal consumption, c_2 = the ratio which any increase in State expenditure on goods and services bears to the increase in the national income which has induced that increase, and c_3 = the ratio which any increase in expenditure on capital development that may be induced by a given increase in the national income bears to that increase in the national income.

As far as c_1 is concerned, an increase in the national income causes some increase in the demand for goods and services for personal consumption, but probably not an equal increase (*i.e.*, $0 < c_1 < 1$) for the following reasons:—

(i) Some part of the increased income associated with greater employment will merely replace the unemployment benefit of previously unemployed labour, and this will not lead to any increased incomes at the disposal of consumers. Public expenditure out of the Unemployment Insurance Fund will be reduced by this amount, and the surplus or saving of the Fund will be correspondingly increased.

(ii) A part of the net increase in income may be taken by the Government in increased direct taxes and added to a Budget surplus, and this again does not lead to any increase in the tax-free incomes at the disposal of consumers.

(iii) Some part of the increased income remaining after direct taxes are paid may be saved, either in the form of being added to reserves of undistributed profits by companies which are earning a larger income or in the form of savings of one kind or another by private individuals.

(iv) Of the remainder which is spent on goods and services some part may represent indirect taxes levied on those goods

and services, and this increased revenue of the Government may also be added to a Budget surplus. On the other hand, if any part of personal consumption is subsidised, the demand for goods and services at factor cost will go up by more than the increased expenditure out of the incomes of the private consumers, and allowance must be made for this in calculating the final effect upon the demand at factor cost for additional goods and services for personal consumption.

For these reasons, the consumption element c_1 in the expression given for $1 - \lambda$ above may be written as

$$(1 - u)(1 - d)(1 - s)(1 - i)$$

where u = the proportion of any increase in income which merely replaces unemployment benefit, d = the proportion of any net increase in income which is paid in direct taxes, s = the proportion of any increase in income after payments of direct taxes which is saved, and i = the proportion of any increased expenditure on personal consumption which is taken in net indirect taxes, *i.e.*, in indirect taxes less subsidies.

As far as c_2, the State expenditure element in $1 - \lambda$, is concerned, the improvement in the State Budget as a result of the increased revenue from direct and net indirect taxes and of the reduced expenditure on unemployment benefit which follows a unit increase in the national income is

$$u + (1 - u)(d + [1 - d][1 - s]i)$$

and we may then write

$$c_2 = e\{u + (1 - u)(d - [1 - d][1 - s]i)\}$$

where e represents the proportion of any increase in its Budget surplus which the State uses to increase its expenditure on goods and services.

The new investment element c_3 in $1 - \lambda$ presents certain difficulties. The extent to which home investment will be stimulated depends upon internal monetary policy. If, for example, the policy of the monetary authority is to keep the rate of interest constant—(the only policy which is strictly compatible with our rigid " multiplier " assumption that all prices remain unchanged)—the increase in domestic investment will be greater than if the amount of money is kept constant and the rate of interest allowed to rise as the internal demand for money to finance the increased business turnover itself increases. Moreover, the extent to which home investment is stimulated will also depend upon the period which we are considering. The increased

domestic activity may require some period during which new capital is installed to meet some of the increased demand; but when this period is over, home investment will fall back again. These factors must be borne in mind in considering c_3.

In what follows we shall assume that $0 < 1 - \lambda < 1$. The sum of $c_1 + c_2$ is almost certainly < 1 and $1 - \lambda$ is, therefore, likely to be < 1 unless c_3 is appreciable. If, however, $1 - \lambda$ were > 1, then the equilibrium of a closed economy would be unstable since, for example, any chance primary increase in domestic expenditure in A would set up so large a series of repercussions on its national income and so again on its domestic expenditure as to cause the national income to rise indefinitely. In an open economy $1 - \lambda_a$ might be somewhat greater than 1 without causing instability in A because at each round of expansion part of the increased domestic expenditure in A would represent an increased demand for B's products, not all of which would come back onto A's goods unless B adopted a policy of External Balance. We shall disregard the possibility of instability in what follows.

Equations (8*a*) and (8*b*) show how each country's "induced" imports are determined. We assume that there is a given "marginal propensity to import" in each country (π_a and π_b) which expresses what fraction of any induced increase in domestic expenditure (*i.e.*, $[1 - \lambda_a]Y_a$ and $[1 - \lambda_b]Y_b$) will be spent on the purchase of imported as opposed to home-produced supplies.[1]

Equations (9*a*) and (9*b*) show how each country's induced net foreign lending is determined. If there is a rise in income in any country (*e.g.*, Y_a) this may have a twofold effect upon that country's net foreign lending. On the one hand, it may increase it because when the national income rises people will save more, and when they save more they may naturally lend some part of their increased savings abroad. On the other hand, the increase

[1] The normal import content of the various elements making up the total "induced" increase in domestic expenditure may differ considerably. For example, the normal import content of an induced increase in personal consumption might be markedly greater (or less) than the normal import content of an induced increase in public or private investment. We can write π_a and π_b in terms of weighted averages of the normal import contents of the three elements (c_1, c_2 and c_3) which we have already distinguished in the proportion $(1 - \lambda)$ of any increment in the national income which represents an induced increase in domestic expenditure. Let π_1, π_2 and π_3 represent the normal import contents of an increment of personal consumption, Government consumption and public or private investment respectively. Then

$$\pi = \frac{c_1\pi_1 + c_2\pi_2 + c_3\pi_3}{c_1 + c_2 + c_3}.$$

in the national income must be caused by an increased demand (whether internal or external) for that country's products and that must mean that the country's production has become more profitable. For this reason those with funds to invest may decide to lend a larger amount than they would otherwise have done to this country instead of to other countries. If the first influence outweighs the second, γ_a and γ_b will be positive, but will probably be less than unity; if the second outweighs the first, they will be negative. If the two factors cancel each other out, they will be zero.

Equations (10a), (10b), (11a) and (11b) merely define terms (π_{as}, π_{ap}, π_{bs} and π_{bp}) which may on occasion prove useful for expressing the ratio between a "spontaneous" (or "policy") increase of imports and the "spontaneous" (or "policy") increase of domestic expenditure with which it is associated. In some cases these π's may truly express the normal "marginal propensity to import" which is associated with a given "spontaneous" or "policy" increment of domestic expenditure. Consider π_{ap}, for example. There is a "policy" increment of domestic expenditure D_{ap}, undertaken to preserve the Internal or External Balance of the economy of country A; if there is no attempt to control imports or to select for the "policy" increase an element of domestic expenditure which has a peculiarly high or low import content, then there will be directly associated with this increment of domestic expenditure (D_{ap}) an increment of imports (I_{ap}) which bears a normal relationship to it. In other words, in this case π_{ap} will equal π_a.[1] But the "policy" decision may not be of this character. There might, for example, be a decision to increase domestic expenditure, but in a peculiarly "protective" manner which meant that the increment of domestic expenditure was directed solely on to home-produced goods. In this case $\pi_{ap} = 0$. Or the policy decision might be simply to allow more imports into the country (*e.g.*, by relaxing an import restriction) without doing anything to increase domestic expenditure as a whole. In this case $\frac{1}{\pi_{ap}} = 0$. And similarly with a "spontaneous" change in domestic expenditure on imports. The change may be solely in domestic expenditure with a normal import content, in which case $\pi_{as} = \pi_a$. Or there may be a simple shift from home-produced to imported goods within a

[1] Or, more accurately, will equal that element in the weighted average comprising π_a which corresponds most nearly to the type of "policy" increase in domestic expenditure with which we are concerned. (See footnote on page 495.)

given level of domestic expenditure, in which case $\frac{1}{\pi_{as}} = 0$. And so on. There are an infinite variety of "spontaneous" disturbances or of "policy" decisions which may lead to changes in imports and in domestic expenditure in many varied combinations. In some cases π_{as}, π_{bs}, π_{ap} and π_{bp} will represent the normal propensities to consume associated with D_{as}, D_{bs}, D_{ap}, and D_{bp}. In other cases they will merely express the particular relationship between increments of imports and increments of domestic expenditure which rules in a more complicated situation. The context of each problem as it arises must determine their nature.

In discussing equations (8), (10) and (11) we have considered the factors determining a country's demand for imports as if all imports were for domestic consumption. But this is not the case. Imports may be needed not only to consume directly at home or to work up into products for such domestic consumption, but also for the purpose of making goods to be sold for export. For this reason the gross demand for imports must be related not only to the total of domestic expenditure but also to the export element in the country's balance of current payments.

It is very simple to make allowance for this fact in the preceding equations. The balance of current payments is itself a net figure and represents only the net excess of exports over imports, in the sense that it includes on the export side all the direct or indirect re-exports of the imports enumerated on the import side so that only the imports less these re-exports count as a net subtraction to the favourable balance of current payments. Any increment of imports (whether "spontaneous," "policy" or "induced") must be treated in the same net way. If, for example, the domestic expenditure of country A shifts from home-produced to imported goods, then this represents a net shift of demand to country B's goods only in so far as the additional goods which country A imports from country B do not contain raw materials which country B must import from country A.[1] In so far as they do contain such raw materials the shift of country A's

[1] The raw material content of exports is not the only possible example of this factor. Another case would be where one country (*e.g.*, the United Kingdom) imported for her own use additional quantities of some product (*e.g.*, rubber) in the production of which she had significant overseas investments so that part of the increased expenditure on the rubber came back to her as an invisible export in the form of increased profits on overseas investments. An increased interest on its overseas investments due to the increased purchase by country A of imports of some product is the same, for our purposes, as the export by country A of a material for inclusion in a finished product which is to be exported by country B to country A.

demand does not represent a shift away from her own home-produced products.

Let p_a = the proportion of country A's exports which represents a raw material or other content purchased from country B, and p_b = the proportion of country B's exports which represents a raw material or other content purchased from country A. Then if there is a gross increment of imports by A equal to $\overline{I}_a$ only $(1 - p_b)\overline{I}_a$ represents a net increment in the demand for country B's goods, while $p_b\overline{I}_a$ represents an increment in the demand for A's goods. In the equations on page 490 above the terms for imports must all be interpreted in this "net" sense. In other words, $I_{as} = (1 - p_b)\overline{I}_{as}$, $I_{ap} = (1 - p_b)\overline{I}_{ap}$ and $I_{ai} = (1 - p_b)\overline{I}_{ai}$, where $\overline{I}_{as}$, $\overline{I}_{ap}$, and $\overline{I}_{ai}$ represent gross increments of imports of a "spontaneous," "policy" or "induced" character. And similarly, $I_{bs} = (1 - p_a)\overline{I}_{bs}$, $I_{bp} = (1 - p_a)\overline{I}_{bp}$ and $I_{bi} = (1 - p_a)\overline{I}_{bi}$.

The π's in the equations on page 490 must be similarly interpreted in a net manner. If $\overline{\pi}_a$ = the gross propensity to import associated with any given "induced" increment of domestic expenditure, then π_a as used in those equations $= (1 - p_b)\overline{\pi}_a$. Similarly, $\pi_{as} = (1 - p_b)\overline{\pi}_{as} = (1 - p_b)\dfrac{\overline{I}_{ab}}{\overline{D}_{as}}$, and so on. All the π's used in this article are in this sense "net."

In what follows we shall assume that π_a and π_b [1] are positive fractions lying between 0 and 1. This is undoubtedly the normal case. It is, however, conceivable that if a country imported "superior goods" it might, when its real domestic expenditure went up, spend on imports more than the whole of the increment of its domestic expenditure as it shifted away from the "inferior goods" which it produced at home. In this case π would be >1. Alternatively, if a country imported "inferior goods" it might actually import less when its total domestic expenditure increased; and in this case π would be < 0. The reader is left to apply for himself, if he so wishes, these abnormal conditions to the conclusions of this article, which will be based on the normal assumption that $0 < \pi < 1$.

Equations (1) to (9) can be reduced to the following four equations :—

$$\lambda_a Y_a - D_{ap} - T = D_{as} \quad . \quad . \quad (12)$$

$$\lambda_b Y_b - D_{bp} + T = D_{bs} \quad . \quad . \quad (13)$$

$$\pi_a(1-\lambda_a)Y_a - \pi_b(1-\lambda_b)Y_b + I_{ap} - I_{bp} + T = -I_{as} + I_{bi} \quad (14)$$

$$-\gamma_a Y_a + \gamma_b Y_b + T - P = L_s \quad . \quad . \quad (15)$$

[1] And for that matter also the elements (π_1, π_2 and π_3) from which the weighted averages π_a and π_b are obtained. (See footnote on page 495.)

Of the nineteen terms in these four equations, eleven are always known; namely, the five "spontaneous" disturbances (D_{as}, D_{bs}, I_{as}, I_{bs}, L_s) and the six structural parameters (π_a, π_b, λ_a, λ_b, γ_a and γ_b). This leaves eight unknowns to be determined in terms of our known quantities; namely, the two increments of national income (Y_a and Y_b), the four "policy" changes which must be made to offset the spontaneous disturbance (D_{ap}, D_{bp}, I_{ap}, I_{bp}) and two terms showing the final effect on the balance of payments (T and P). We have so far four equations and eight unknowns.

The missing four relationships are given by the various possible policy assumptions, as indicated in the following table :—

New Relationships Introduced by Various Policy Assumptions

Policy Assumed.	Country	
	A.	B.
Neutral	$D_{ap} = 0$ $I_{ap} = 0$	$D_{bp} = 0$ $I_{bp} = 0$
Internal Balance	$Y_a = 0$ $I_{ap} = \pi_{ap} D_{ap}$	$Y_b = 0$ $I_{bp} = \pi_{bp} D_{bp}$
External Balance	$P = 0$ $I_{ap} = \pi_{ap} D_{ap}$	$P = 0$ $I_{bp} = \pi_{bp} D_{bp}$

It may be useful very briefly to go through the various policy choices shown in the above table for a country (*e.g.*, country A). If it has a Neutral Economy it will take no positive steps to offset any initial disturbance either by inflating or deflating domestic expenditure or by restricting or encouraging imports. D_{ap} and I_{ap} will all be zero.

If A has an Internally Balanced Economy it will take steps to ensure that its national income is unchanged and Y_a will be zero. There would still remain the choice whether the authorities should attempt to preserve a constant demand for the country's produce mainly by an internal inflation or deflation of domestic expenditure or mainly by taking measures to shift demand to (or from) home-produced goods away from (or on to) imports. In other words, we need to know one more thing : the relationship between D_{ap} and I_{ap}. This relationship is obtained by assuming as known $\pi_{ap}\left(=\frac{I_{ap}}{D_{ap}}\right)$, the ratio of the "policy" change in imports to the "policy" change in domestic expenditure. If the

authorities act solely by way of the internal deflation or inflation of domestic expenditure which contains a normal import content, then π_{ap} is this given normal import content. If the authorities do not act at all on domestic expenditure but solely on a shift of demand between home-produced and foreign goods, then $\frac{1}{\pi_{ap}} = 0$. And so on with more complicated forms of policy. In any case there are two additional relationships ($Y_a = 0$ and $I_{ap} = \pi_{ap} D_{ap}$) due to the policy assumption.

If country A has an Externally Balanced Economy, then it will take care to ensure that its total balance of payments is not disturbed, so that $P = 0$. To do this it may operate by an internal inflation or deflation of its domestic demand (in which case $\frac{I_{ap}}{D_{ap}} = \pi_{ap}$ measures the given normal propensity to import), or solely by a shift of demand between home-produced and foreign goods (in which case $\frac{1}{\pi_{ap}} = 0$), or by more complicated combinations of I_{ap} and D_{ap} (which will be represented by other values of π_{ap}). In any case there are once more two additional relationships introduced by the policy assumptions regarding country A.

The same is also true of country B. Each policy assumption which is made about country B also introduces two additional relationships. The two policy relationships introduced for country A with the two introduced for country B thus provide the four additional relationships to determine the system.

There is, however, one exception to this conclusion. Each of the three policy assumptions for country A can be combined with each of the three policy assumptions for country B. Thus A and B can both have Neutral Economies; or A Neutral and B Internally Balanced; or A Neutral and B Externally Balanced; and so on. Each of the possible nine policy combinations provides the four additional relationships which we require, with the exception of the policy combination, External Balance in A with External Balance in B. In this case, as can be seen from the above table, only three additional relationships ($P = 0$, $I_{ap} = \pi_{ap} P_{ap}$ and $I_{bp} = \pi_{bp} D_{bp}$) are introduced, because $P = 0$ is in this case common to both A's and B's policy assumptions.

The economic meaning of this is clear. Suppose some primary disturbance (*e.g.*, a shift of demand away from A's goods on to B's goods) takes place which causes A to have an adverse balance of payments. Both A and B have Externally Balanced Economies. A therefore deflates and/or restricts imports. B

inflates and/or removes obstacles to imports. But how much of the adjustment must fall on A and how much on B? If A deflates or restricts imports a lot, B will have to inflate or expand imports only a little; and vice versa. Clearly some additional information is required to know how much of the adjustment must fall on each country.

In what follows we shall introduce this additional piece of information by assuming as given $m\left(=-\frac{Y_b}{Y_a}\right)$ which measures the ratio between the inflation (or deflation) of national income in B and the deflation (or inflation) of national income in A. Those who like to do so can think of this in terms of an old-fashioned gold standard. There is a primary improvement in country B's balance of payments and gold flows from A to B. In B gold has an income velocity of circulation of V_b and in A it has an income velocity of circulation of V_a. When an amount of gold, G, has flowed from A to B, $Y_b = V_bG$ and $Y_a = -V_aG$ so that $m = -\frac{Y_b}{Y_a} = \frac{V_b}{V_a}$.

VI. The General Solution

The equations in Table I give the values, derived from equations (12), (13), (14) and (15), for the changes in national incomes of countries A and B (Y_a and Y_b) and for the changes in the balance of trade and the balance of payments between them (T and P), in terms of simultaneous spontaneous changes in domestic expenditure (D_{as} and D_{bs}) and imports (I_{as} and I_{bs}) in each country and in the net foreign lending between them (L_s). The values of the policy changes in domestic expenditure (D_{ap} and D_{bp}) which are required in each country on the various policy assumptions made can be obtained from these by writing $D_{ap} = \lambda_a Y_a - D_{as} - T$ and $D_{bp} = \lambda_b Y_b - D_{bs} + T$. From this I_{ap} and I_{bp} can be derived by writing $I_{ap} = \pi_{ap} D_{ap}$ and $I_{bp} = \pi_{bp} D_{bp}$.

In these equations T_s is written for $-I_{as} + I_{bs}$ since these two terms always appear together in that combination. T_s represents the net "spontaneous" improvement in A's balance of trade, *i.e.*, it measures the net "spontaneous" shift in demand from B's on to A's goods. For deriving multipliers for special cases T_s may be broken down in the following formulæ into its two components $-I_{as} + I_{bs}$.

Moreover, for purposes of simplification, in the equations in Table I μ_a is written for $\frac{\pi_a(1-\lambda_a)}{\lambda_a}$ and μ_b for $\frac{\pi_b(1-\lambda_b)}{\lambda_b}$.

In Table I six of the possible nine policy combinations are examined. We have omitted to give the general solutions in the remaining three cases because these can readily be derived from the six cases which have been given. Thus we give the solutions for the case in which country A has a Neutral Economy and Country B an Internally Balanced Economy, but we do not give the solution for the case where it is A which has the Internally Balanced Economy and B the Neutral Economy. The latter can be derived from the former by writing throughout each equation the subscript a for the subscript b and vice versa and changing the signs of T_s, T, P and L_s.

What do these equations for the general solution show us? We must assume that there is some primary disturbance affecting simultaneously the imports and the domestic expenditure of both countries and the net amount of financial transfers (*e.g.*, for foreign lending) between them. In other words, I_{as}, I_{bs}, D_{as}, D_{bs} and L_s are all given.[1] The equations then show the effect of the complex primary disturbance on the national incomes of the two countries and on their balance of trade and their overall balance of payments on the various policy assumptions.

The equations in Table I are in too general a form for it to be at all easy to use them to point out the main results of this multiplier analysis. It has, however, been thought best to give these general formulæ because some readers may be interested to use these equations for the solution of their own pet problems on their own pet simplifying assumptions.

For this purpose the following points may be useful :—

(i) A great deal of the complication of the multipliers in Table I is due to the complexity of the type of primary disturbance

[1] For example, suppose that there were an increase in investment opportunities in country A leading to a spontaneous increase in its domestic expenditure for home investment (D_{as}). With this is associated a certain increased demand for imports (I_{as}). But the increased investment opportunities encouraged people to lend more to A rather than B so that there is a fall in net foreign lending from A to B (L_s). People in B save somewhat more to make the best of this new opportunity for investment and there is a fall in B's domestic expenditure (D_{bs}) with which is associated some fall in B's imports (I_{bs}). Suppose that a proportion π of D_{as} is spent on imports; that a proportion l of D_{as} is financed by a net increase in B's lending to A; that a proportion s of this increased net lending to A comes from reduced domestic expenditure in B; and that a proportion π_{bs} of this reduced domestic expenditure in B represents a reduced demand for imports. Then $I_{as} = \pi_{as}D_{as}$; $L_s = -lD_{as}$; $D_{bs} = -slD_{as}$; and $I_{bs} = -\pi_{bs}slD_{as}$. By substituting these values for I_{as}, I_{bs}, D_{bs} and L_s in the equations of Table I the effect of the primary change D_{as} on the various unknowns could be obtained.

TABLE I

The General Equations

Policy Combination 1

Neutral Economy in A. $(D_{ap} = 0,\ I_{ap} = 0)$
Neutral Economy in B. $(D_{bp} = 0,\ I_{bp} = 0)$

$$Y_a = \frac{1}{\lambda_a} \cdot \frac{(1 + \mu_b)D_{as} + \mu_b D_{bs} + T_s}{1 + \mu_a + \mu_b}$$

$$Y_b = \frac{1}{\lambda_b} \cdot \frac{\mu_a D_{as} + (1 + \mu_a)D_{bs} - T_s}{1 + \mu_a + \mu_b}$$

$$T = \frac{-\mu_a D_{as} + \mu_b D_{bs} + T_s}{1 + \mu_a + \mu_b}$$

$$P = \frac{-\left(\left[1 - \frac{\gamma_b}{\lambda_b}\right]\mu_a + \frac{\gamma_a}{\lambda_a}[1 + \mu_b]\right)D_{as} + \left(\left[1 - \frac{\gamma_a}{\lambda_a}\right]\mu_b + \frac{\gamma_b}{\lambda_b}[1 + \mu_a]\right)D_{bs} + \left(1 - \frac{\gamma_a}{\lambda_a} - \frac{\gamma_b}{\lambda_b}\right)T_s}{1 + \mu_a + \mu_b} - L_s$$

Policy Combination 2

Neutral Economy in A. $(D_{ap} = 0,\ I_{ap} = 0)$
Internally Balanced Economy in B. $(Y_b = 0,\ I_{bp} = \pi_{bp}D_{bp})$

$$Y_a = \frac{1}{\lambda_a} \cdot \frac{(1 - \pi_{bp})D_{as} - \pi_{bp}D_{bs} + T_s}{1 + \mu_a - \pi_{bs}}$$

$$T = \frac{-\mu_a D_{as} - \pi_{bp}D_{bs} + T_s}{1 + \mu_a - \pi_{bp}}$$

$$P = \frac{-\left(\mu_a + \frac{\gamma_a}{\lambda_a}[1 - \pi_{bp}]\right)D_{as} + \left(1 - \frac{\gamma_a}{\lambda_a}\right)(-\pi_{bp}D_{bs} + T_s)}{1 + \mu_a - \pi_{bp}} - L_s$$

Policy Combination 3

Neutral Economy in A. $(D_{ap} = 0,\ I_{ap} = 0)$
Externally Balanced Economy in B. $(P = 0,\ I_{bp} = \pi_{bp}D_{bp})$

$$Y_a = \frac{1}{\lambda_a} \cdot \frac{\left(\mu_b + \pi_{bp} + \frac{\gamma_b}{\lambda_b}[1 - \pi_{bp}]\right)D_{as} + \frac{\gamma_b}{\lambda_b}(-\pi_{bp}D_{bs} + T_s) + (\mu_b + \pi_{bp})L_s}{\left(1 - \frac{\gamma_a}{\lambda_a}\right)(\mu_b + \pi_{bp}) + \frac{\gamma_b}{\lambda_b}(1 + \mu_a - \pi_{bp})}$$

$$Y_b = \frac{1}{\lambda_b} \cdot \frac{\left(\mu_a + \frac{\gamma_a}{\lambda_a}[1 - \pi_{bp}]\right)D_{as} - \left(1 - \frac{\gamma_a}{\lambda_a}\right)(-\pi_{bp}D_{bs} + T_s) + (1 + \mu_a - \pi_{bp})L_s}{\left(1 - \frac{\gamma_a}{\lambda_a}\right)(\mu_b + \pi_{bp}) + \frac{\gamma_b}{\lambda_b}(1 + \mu_a - \pi_{bp})}$$

$$T = \frac{\left(\frac{\gamma_a}{\lambda_a}[\mu_b + \pi_{bp}] - \frac{\gamma_b}{\lambda_b}\mu_a\right)D_{as} + \frac{\gamma_b}{\lambda_b}(-\pi_{bp}D_{bs} + T_s) + (\mu_b + \pi_{bp})L_s}{\left(1 - \frac{\gamma_a}{\lambda_a}\right)(\mu_b + \pi_{bp}) + \frac{\gamma_b}{\lambda_b}(1 + \mu_a - \pi_{bp})}$$

Policy Combination 4

Internally Balanced Economy in A. $(Y_a = 0,\ I_{ap} = \pi_{ap}D_{ap})$
Internally Balanced Economy in B. $(Y_b = 0,\ I_{bp} = \pi_{bp}D_{bp})$

$$T = \frac{\pi_{ap}D_{as} - \pi_{bp}D_{bs} + T_s}{1 - \pi_{ap} - \pi_{bp}}$$

$$P = \frac{\pi_{ap}D_{as} - \pi_{bp}D_{bs} + T_s}{1 - \pi_{ap} - \pi_{bp}} - L_s$$

TABLE I—*continued*

Policy Combinaton 5

Internally Balanced Economy in A. $(Y_a = 0,\ I_{ap} = \pi_{ap}D_{ap})$
Externally Balanced Economy in B. $(P = 0,\ I_{bp} = \pi_{bp}D_{bp})$

$$Y_b = \frac{1}{\lambda_b} \cdot \frac{-\pi_{ap}D_{as} + \pi_{bp}D_{bs} - T_s + (1 - \pi_{ap} - \pi_{bp})L_s}{\mu_b + \pi_{bp} + \frac{\gamma_b}{\lambda_b}(1 - \pi_{ap} - \pi_{bp})}$$

$$T = \frac{\frac{\gamma_b}{\lambda_b}(\pi_{ap}D_{as} - \pi_{bp}D_{bs} + T_s) + (\mu_b + \pi_{bp})L_s}{\mu_b + \pi_{bp} + \frac{\gamma_b}{\lambda_b}(1 - \pi_{ap} - \pi_{bp})}$$

Policy Combination 6

Externally Balanced Economy in A. $(I_{ap} = \pi_{ap}D_{ap})$
Externally Balanced Economy in B. $(I_{bp} = \pi_{bp}D_{bp})$ $\Big\}\ (P = 0,\ Y_b = -mY_a)$

$$Y_a = \frac{\pi_{ap}D_{as} - \pi_{bp}D_{bs} + T_s - (1 - \pi_{ap} - \pi_{bp})L_s}{\lambda_a(\mu_a + \pi_{ap}) + m\lambda_b(\mu_b + \pi_{bp}) + (\gamma_a + m\gamma_b)(1 - \pi_{ap} - \pi_{bp})}$$

$$T = \frac{(\gamma_a + m\gamma_b)(\pi_{ap}D_{as} - \pi_{bp}D_{bs} + T_s) + (\lambda_a[\mu_a + \pi_{ap}] + m\lambda_b[\mu_b + \pi_{bp}])L_s}{\lambda_a(\mu_a + \pi_{ap}) + m\lambda_b(\mu_b + \pi_{bp}) + (\gamma_a + m\gamma_b)(1 - \pi_{ap} - \pi_{bp})}$$

there assumed. We shall in the next section examine the effects of much simpler types of primary change.

(ii) Much of the complication of many of the multipliers given in Table I is removed if it is assumed that $\gamma_a = \gamma_b = 0$, *i.e.*, that changes in the national income in countries A and B do not induce any significant changes in net foreign lending.

(iii) Much complication can be removed from many of the formulæ by assuming that $\pi_{as} = \pi_{ap} = \pi_a$ and $\pi_{bs} = \pi_{bp} = \pi_b$, or, in other words, that the proportion of any "spontaneous" or "policy" increment of domestic expenditure has the same import content as an "induced" increment of domestic expenditure. For some purposes it is, of course, of the nature of the problem to assume that this is not the case. π_{as}, π_{ap}, π_{bs} and π_{bp} may range from 0 (when there is no import content in the "spontaneous" or "policy" change of increment of domestic expenditure) to ∞ (when there is merely a "spontaneous" or "policy" shift of demand from home-produced to imported goods without any "spontaneous" or "policy" increment of domestic expenditure). But where the nature of the problem allows it to be reasonably assumed that the π's for any one country are all equal, great simplification is often possible.[1]

[1] In this connection it should be observed that since $\mu_a = \pi_a\left(\frac{1 - \lambda_a}{\lambda_a}\right)$, $\mu_a + \pi_a$ (which frequently occurs in the formulæ) $= \frac{\pi_a}{\lambda_a}$. And similarly with $\mu_b + \pi_b$. Also, for example, since $T_s = -I_{as} + I_{bs}$, $T_s + \pi_{ap}D_{as} - \pi_{bp}D_{bs} = 0$, if $\pi_{ap} = \pi_{as}$ and $\pi_{bp} = \pi_{bs}$. (Cf. equations in Table I Policy Combinations 5 and 6.)

In the following section of this article these general formulæ will be applied with appropriate simplifying assumptions to give the answers to certain specific "multiplier" problems.

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(*To be concluded*).

NOTES ON SOME DYNAMIC MODELS

IT was shown several years ago that the principles of acceleration and the multiplier offered a simple and convenient basis on which to construct dynamic models, and it was on this basis that Mr. Harrod and Prof. Samuelson constructed their remarkable analyses.[1]

It might be expected that since both these analyses are based on somewhat similar premises, there would be some fundamental similarity in the general results. However, this expectation is largely not borne out by the results. Prof. Samuelson's model exhibits (alternatively) cyclical and non-cyclical variation of the national income through time, with trends in the amplitude of the fluctuations in the first case and in the magnitude of the national income in the second. Mr. Harrod, on the other hand, suggests that his model indicates a standard "warranted" course of the level of national income through time which requires income to increase by an ever increasing absolute amount per unit of time, and any departure from this warranted course will result, so we are assured, in a tendency on the part of the national income to sink further and further below, or rise higher and higher above its warranted level.[2]

This paper attempts a critical examination of these two models for the purpose of explaining the relationship between them and offering a composite model which, it is believed, contains some of the advantages of both.

I

We begin with an examination of some aspects of Mr. Harrod's system. It might perhaps be helpful to recapitulate briefly, emphasising meanwhile the points in which we are most interested

[1] Cf. R. F. Harrod, "An Essay in Dynamic Theory," *Economic Journal*, 1939, and Paul A. Samuelson, "Interractions Between the Multiplier Analysis and the Principle of Acceleration," *Review of Economic Statistics*, 1939, also reproduced in *Readings in Business Cycle Theory*. Cf. also "A Synthesis of the Principle of Acceleration and the Multiplier," *Journal of Political Economy*, 1939.

[2] Mr. Harrod does, of course, discuss the possibility of cyclical behaviour within the framework of his model. But this must be imposed on his system, so to speak, from the outside. It certainly does not follow directly from his acceleration-multiplier analysis as it does for Prof. Samuelson's.

here. I have taken the liberty of modifying some of the terminology and notation in the interests of ready comparability with the system of Prof. Samuelson.

Mr. Harrod begins with two basic assumptions, one of which is later modified. The first is the premise that the net saving of a community during any period of time, t, is a constant proportion, s, of the income $Y(t)$, received during that period.[1] This proportion is, of course, the (constant) marginal propensity to save, and hence the reciprocal of the multiplier.

The demand for new investment during any particular period, on the other hand, is assumed on first approximation to be proportionate to the rate of increase of total output (income), since " The demand for maintenance and replacement of existing capital varies with the amount of demand for finished products, while the demand for new construction or enlargement of stocks depends on whether or not the sales of the finished product are growing." [2] This is, of course, a variant of the acceleration principle.

We may then say that total demand for capital during period t will be $C(Y(t) - Y(t-1))$, where $Y(t)$ is the income received by the community during period t, and $Y(t) - Y(t-1)$ is the increase in the income received by the community during period t over the income received during the preceding period. C is a constant giving the proportion between such a rise in income (output) and the resulting demand for investment.[3]

Since net investment during t is necessarily identically equal to net saving during that period (*ex post*), investment actually realised will be $sY(t)$. Then if investment demand is to be just exactly satisfied with no undesired accumulation or depletion of stocks, we must have

$$\text{investment demand} = C(Y(t) - Y(t-1)) = sY(t) = \text{investment realised.}$$

[1] Alternatively we may postulate saving to be a constant proportion of income in the preceding period, $Y(t-1)$, thus assuming a lag in the effects of income on saving. The choice between these possibilities in no way affects the subsequent analysis, and I believe Mr. Harrod himself sometimes employs the one assumption and sometimes the other. The essential point is, of course, to approximate the situation at a point of time, and the possibility of ambiguity or interpretation arises because the period employed is of duration greater than zero.

[2] J. M. Clark, " Business Acceleration and the Law of Demand," *Readings in Business Cycle Theory*, p. 328. Here we interpret " finished products " to include finished machines and other capital goods, although Prof. Clark might not approve of this interpretation.

[3] Note that s and C depend on the rate of interest.

Dividing both sides of our equation $C(Y(t) - Y(t-1)) = sY(t)$ by $CY(t)$, we obtain :

$$\frac{s}{C} = \frac{(Y(t) - Y(t-1))}{Y(t)}.$$

This has the following implications :

(1) Since s, C and $Y(t)$ are all presumably positive,[1] that is, the community has some income, and as the savings of the community presumably increase with income and its investment demand increases with the rate of increase of income, we must also have $Y(t) - Y(t-1)$ positive, that is national income must be growing in order for investment demand to be equal to investment realised.

(2) Since s and C and hence $\frac{s}{C}$ are constant, the rate of growth of income $(Y(t) - Y(t-1))$ must be a constant proportion of income $Y(t)$, in order to obtain equality between investment demand and investment. This means in fact that as income grows, the rate of increase of income must also grow, and indeed income must grow faster and faster, *i.e.*, it must grow at a constant geometric rate, with time.[2]

This somewhat startling conclusion is not essentially modified when Mr. Harrod makes allowance for foreign balances (which may be taken as a sort of investment demand) and some investment demand not based on this acceleration principle. Thus the foreign balance may be proportional to output (income) rather than its rate of increase, and other capital demands, *e.g.*, government demand, may be largely independent of income, at least in the relatively short run. Thus we may consider capital demand to be represented by

$$C(Y(t) - Y(t-1)) + KY(t) + L$$

where in the relatively short period K and L are constants, where-

[1] It is, of course, conceivable that s can be negative, *i.e.*, that a community will, at least for a time, live on its capital. Then we must (for satisfaction of investor demands) require income to be decreasing at a decreasing rate. The reasoning is identical with that employed in the case of positive s.

[2] This result may also be obtained as follows :

The basic hypothesis, saving sY, proportional to income Y, investment demand proportionate to rate of increase of income and the condition of equality between the two may be expressed by the differential equation :

$$sY = C\frac{dY}{dt}$$

i.e.,

$$\frac{dY}{Y} = \left(\frac{s}{C}\right)dt$$

which when integrated gives

$$\log Y = t\left(\frac{s}{C}\right) + K, \text{ or } Y = Ke^{t\left(\frac{s}{C}\right)}, \text{ where } K \text{ is a constant, } K = Y(0).$$

upon the condition for equality between saving and investment demand becomes :

$$sY(t) = C(Y(t) - Y(t-1)) + KY(t) + L$$

so that dividing both sides by $CY(t)$ we get

$$\frac{s}{C} = \frac{(Y(t) - Y(t-1))}{Y(t)} + \frac{K}{C} + \frac{L}{CY(t)}$$

i.e.,

$$\frac{(s-K)}{C} - \frac{L}{CY(t)} = \frac{(Y(t) - Y(t-1))}{Y(t)}.$$

This implies that the required proportion between rate of growth of income and income is somewhat smaller than in the preceding simplified case. However, if non-acceleration demand is by itself insufficient to take up saving (*i.e.*, the left-hand side of the equation is positive) then income will still be required to grow with time. Moreover, since the negative term $\frac{L}{CY(t)}$ tends to vary inversely with the level of income $Y(t)$, while the other term $\frac{(s-K)}{C}$ is a constant, the proportion between the rate of increase on income and income itself will not be constant as before but will increase with time. Thus equality between investment demand and investment realised will again require national income to increase at an ever increasing rate, this time indeed at more than a constant geometric rate.

The argument behind this conclusion can be indicated without recourse to symbols as follows :

If some of investment demand varies directly and in given proportion with the rate of increase of income, and the remainder of investment demand is a smaller quantity than net saving, then in order for total investment demand to equal net saving, income must increase at a sufficient rate to induce investors to demand the residue, *i.e.*, the difference between total saving and non-acceleration investment demand. If this residue increases proportionately or more than proportionately with income, this means that the rate of increase of income will also have to grow proportionately or more than proportionately with income, and so income will have to grow at an ever increasing rate.

To this point Mr. Harrod's arguments follow without exception from the premises. But when we come to the problem of what is likely to happen when income does not proceed as required for equality between investment and investment demand, some question arises. Mr. Harrod maintains that such a departure will be self-aggravating and thus the " warranted " course of the

national income through time (employing an adaptation of Mr. Harrod's terminology) represents an inherently unstable equilibrium. For if income should, say, increase more rapidly than warranted, investment demand will turn out to be incompletely satisfied. This in turn will induce an even faster increase in output (income) which will still further increase the gap between saving and investment demand, and so on. Similarly a fall in the rate of growth of output below the warranted rate will cause the accumulation of undesired capital, and we are presented with the paradoxical conclusion that over-production is caused by an insufficiently great rate of increase of output. This in turn induces a further decrease in the rate of increase of output, further aggravating the initial deficiency in investment demand, etc.

Mr. Harrod examines the possibility of any tendency to instability being counteracted by whatever variations in C and s are likely to be encountered in practice.

After making what seems to me to be a good case for his belief that variations in C are apt to reinforce any instability in the system, he admits that variations in s may be in a stabilising direction, for when income rises with a rise in the rate of growth of income above warranted rate, *propensity* to save and hence s are apt to rise and thus help to supply the deficiency in investment which otherwise would have arisen. A similar argument applies to the case of a departure from warranted rate in the downward direction.

Mr. Harrod then argues that the increase in rate of saving, which is required (for stability) to offset the increase in investment demand resulting from a growth of income above its warranted rate, is so high as to be unlikely of realisation. This may be indicated as follows :

Let x be such an increase in income arising in a single period, and s_m the proportion of it saved. Then Cx represents the excess investment demand resulting from this extra income, and if this is to be balanced by extra saving we must have [1]

$$s_m x = Cx,$$

i.e.,

$$s_m = C \qquad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

[1] This comparison can be justified in this way : taking ΔY = excess of income above warranted income, unwarranted investment demand equals $C\frac{\Delta Y}{\Delta t}$, unwarranted saving = $s_m \Delta Y$. Then for the unit period $\Delta t = 1$, *i.e.*, $\frac{\Delta Y}{\Delta t} = \Delta Y$, so that the stability equation becomes

unwarranted saving = $s_m \Delta Y$ = unwarranted investment demand = $C\Delta Y$,

which with $x = \Delta Y$ gives the above relation.

This requires some interpretation. s_m is, in effect, the marginal propensity to save. C, on the other hand, involves a somewhat more difficult concept; it is the ratio between the extra investment that will be demanded *during period t*, and the rise in output during t above that of $t-1$ which brings this investment demand about. If we can assume that investment decisions are made only at discrete dates, and we choose our period such that investment decisions are made during each period exactly once, and indeed at the end of the period, then we may argue that during every period t the rise in output $Y(t) - Y(t-1)$ will have had its full effect on investment demand.

In this case, if there is to be no change in the communities "capital depth," *i.e.*, if capital is to be widened approximately in proportion with the increased output (or perhaps even somewhat more as an offset to diminishing returns), as the acceleration principle implies, then we must have C greater than or equal to the ratio between the initial value of the communities' capital stock, and the initial value of the communities' output per period.

In a modern industrialised community, I think we can safely argue that the following two assumptions hold :

> (*a*) that the decision period is less than a year, *i.e.*, that firms by and large revise their investment demands at least annually;
>
> (*b*) that the ratio between the value of the nation's capital and its annual output is at least 4.

Hence if the decision period is one year, C must be at least 4. If the decision period is six months, since the ratio between national capital and six-monthly output is at least 8, we must have C no smaller than 8; and, in general, if the decision period is less than one year, C must be greater than 4.

Thus, referring back to (1), this implies that for stability to be maintained by means of an increased propensity to save resulting from higher income, the marginal propensity to save must be greater than 4, an unlikely eventuality, to say the least. I think it may be safely concluded that Mr. Harrod's instability principle cannot be rejected on grounds of variability of s with the level of income.

Nevertheless it seems to me that there is some question as to whether the instability argument itself *necessarily* follows from the premises. That such a cumulative deviation from the warranted rate of growth is conceivable and consistent with the

premises I think there can be little doubt. But other alternatives seem possible as well. In order for the argument to hold strictly, the premises must tell us how income will in fact tend to vary through time, and indeed they must tell us that a single departure from the warranted rate of growth of income will cause income in the subsequent periods to involve at least as great a departure from the warranted course.

Mr. Harrod's assumptions, however, tell us only what the actual and desired investment will be in the period after the initial departure *given the level of output* for that period. They do not tell us what that output will in fact tend to be. We may surmise how that output will be determined. Producers will estimate how much they think they will be able to dispose of profitably in the succeeding period and adjust their output accordingly. This estimate will depend, of course, on the general state of producers' expectations. Thus they may be induced in the case of over-production in the previous period, further to reduce the rate of growth of output below the warranted rate.

Now this argument holds only if producers consider the deficiency in demand for total output a more or less permanent affair. If they expect it to be merely temporary, *i.e.*, if they strongly believe that the economy tends to function normally, by and large, and that any untoward state of affairs is merely in the nature of a momentary deviation, they may fail to modify output plans as a result of the deficiency of investment demand. Thus what happens to the level of output subsequently depends on the nature of producers' plans and expectations. A return of the rate of increase of output to the warranted rate is by no means excluded.[1]

[1] Note that for stability (taking the case where actual output has fallen short of warranted output) producers are not required to achieve the output that would have been warranted if the departure in question had never occurred, but rather a considerably lower one. For if $Y(t-1)$ were the actual output in period $t-1$, we would require as usual for the warranted output in period t

$$\frac{s}{C} = \frac{(Y(t) - Y(t-1)}{Y(t)},$$

i.e.,

$$\frac{s}{C} Y(t) - Y(t) = -Y(t-1)$$

or

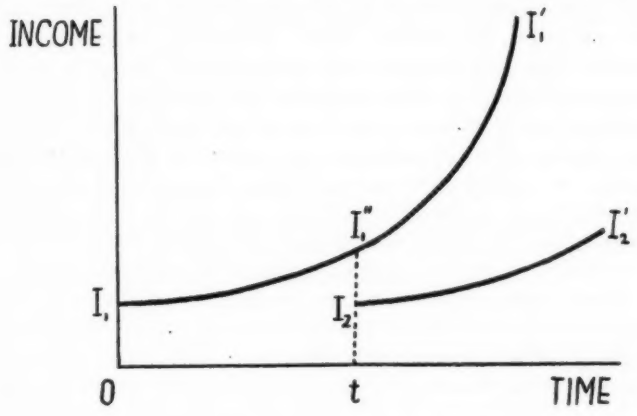
$$Y(t) = \frac{Y(t-1)}{1 - \frac{s}{C}}.$$

This means that the output warranted in period t varies directly with the output in period $t-1$, *i.e.*, if the output in $t-1$ is relatively small, so will be the

Mr. Harrod's conclusion can, of course, be obtained by making an appropriate assumption as to the nature of producer expectations and their subsequent effects on production plans, *i.e.*, we can *assume* that a newly arisen deficiency of demand invariably brings about a wave of pessimism and hence a reduction in planned outputs. It seems plausible that in practice, circumstances will often be encountered under which this assumption is indeed likely to be a valid representation of the facts. Where entrepreneurs have no special reason for expecting a deficiency of demand to be of exceedingly short duration, and where the effects of any price reaction to whatever contraction in output results can safely be considered negligible, then indeed a deficiency in effective demand may well induce producers to revise production plans in a downward direction.

It should be noted, however, that there are other, not always unlikely circumstances, under which this result might not follow. Thus there may be information in the possession of producers leading them to expect imminent revival of effective demand, or the deficiency of effective demand may occur just after a short period of rapidly rising output, and so producer optimism may refuse to be upset by this single event, etc. Moreover, even if contraction does at first result, the situation may be stabilised by

output warranted during t. In the figure, if I_1I_1' initially represents the warranted course and production falls short of the warranted quantity at time t,



the warranted course shifts to I_2I_2', and the rest of the inital warranted course $I_1''I_1'$ loses all significance for the analysis. A similar argument, of course, applies in the case of a departure from the warranted course in the upward direction.

the effects of extreme price flexibility.[1] Thus, while Mr. Harrod's conclusions as to the instability of the situation may in many cases seem quite plausible, there appear to be possible alternative situations which will be characterised by considerably less instability than Mr. Harrod's argument might lead us to expect. In any event, I think it is clear that the argument requires a more extensive set of premises than those explicitly employed by Mr. Harrod.

II

In his premises Mr. Harrod assumes saving always to be determined by the multiplier, with the result that there is no divergence between the saving desired and the saving achieved out of a given income. This would imply that any divergence between desired saving and desired investment must take the form of unintended investment, presumably in the form of undesired (with the given price situation) accumulation or depletion of stocks or equipment. So long as we are considering that income grows at just the warranted rate, desired saving and desired investment are, by hypothesis, equal, and no problem as to undesired saving or investment arises. Thus, for much of Mr. Harrod's analysis, this implication is of little relevance.

If, however, we attempt, as Prof. Samuelson has done, an analysis of what is apt to occur in the general case, we must face the problem of how effects of a difference between desired investment and desired saving are divided between undesired saving and undesired investment. Prof. Samuelson goes to the other extreme from Mr. Harrod, and assumes that the actual level of investment is in fact determined by the acceleration principle so that investment is always equal to desired investment. He takes consumption to be determined by income in the previous time period, so current saving is always whatever current income happens to be, minus this amount. It follows that differences between desired saving and desired investment result invariably in undesired saving achieved by means of unexpected income.

Once these assumptions are made the development of his system becomes straightforward. Prof. Samuelson's accelerator is based in the first instance on the rate of increase of consumption and not output[2] as in Mr. Harrod's analysis. Thus investment

[1] For the conditions necessary for price flexibility to be stabilising see Dr. Lange's *Price Flexibility and Employment*, Chs. III–V.

[2] This assumption also seems somewhat questionable to me since, as in Tugan Baranowsky's celebrated argument, an increasing output of machinery calls for an increased demand for machines to make these machines, just as much as increased

during period t becomes

$$I(t) = A(C(t) - C(t-1)) \quad . \quad . \quad . \quad . \quad (1)$$

where $C(t)$ is consumption during period t and A is a positive constant. We also have

$$C(t) = mY(t-1) \quad . \quad . \quad . \quad . \quad (2)$$

where $Y(t-1)$ is national income during period $t-1$, as before, and m is the constant marginal propensity to consume.[1]

Substituting from (2) into (1) we get

$$I(t) = A(mY(t-1) - mY(t-2)) = mA(Y(t-1) - Y(t-2))$$

which is an acceleration demand for investment based, like Mr. Harrod's, on the rate of increase of income, but differing from it in that it bases investment demand on experienced rate of increase of income in the periods just preceding, and thus involves a time lag in the effect on investment demand of an increase of income.[2]

Prof. Samuelson then argues that income during period t is equal to the sum of investment expenditure and consumption expenditure (a standard *ex post* identity), *i.e.*, we have [3]

$$Y(t) = C(t) + I(t) = mY(t-1) + mA(Y(t-1) - Y(t-2))$$

This is a second-order linear difference equation which in general enables us to deduce income in all periods of time which follow any two consecutive periods whose income is known. It is obvious that if we know $Y(t-1)$ and $Y(t-2)$ we can at once deduce $Y(t)$, and this together with $Y(t-1)$ and our equation give us $Y(t+1)$, etc.

It follows now from the elementary theory of difference equations, that the general course of income over time depends largely on the magnitude of the constants A and m. A second order equation permits six general possibilities, each of which is possible only for special magnitudes of the constants. These are :

(1) income may remain constant through time;

(2) income may increase at an ever-increasing rate or decrease at an ever-increasing rate;

(3) income may asymptotically approach zero (in this case it would approach some other asymptote if we assumed

consumption output calls for increased output of machines to be used in producing them. However, this assumption affects the argument, as is shown presently, only by introducing a time lag in the operation of the income accelerator.

[1] Thus ignoring the complication introduced by the time lag, $m = 1 - s$.

[2] Thus mA is analogous to C just as m is to $1 - s$.

[3] We here ignore Prof. Samuelson's inclusion of autonomous government expenditure which is irrelevant to the present discussion and in no way affects the general form of the arguments.

a constant level of government expenditure, some other constant investment demand or a constant foreign balance);

(4) income may exhibit cyclical behaviour of constant amplitude of fluctuation, or alternatively;

(5) and (6) cyclical behaviour of increasingly greater or increasingly smaller amplitude of fluctuation with time.

It should be noted that in no case will these cyclical fluctuations of the level of income show an upward or downward trend. The range of variation of the constants A and m for which each of these types of behaviour will result can be distinctly demarcated. Prof. Samuelson has done this with great clarity of exposition.

III

The general relationship between Mr. Harrod's and Prof. Samuelson's analysis should now be fairly clear. The one may be regarded primarily as a normative study (I do not employ the word in an ethical sense) indicating the sort of conditions which must be satisfied by the course of the level of the national income through time in order for investment demand to be satisfied. Note that satisfaction of these conditions need not result in the absence of unemployment or inflationary pressure. The latter study is, in a sense, far more ambitious in scope in that it attempts to describe what is in fact likely to occur. As a result, while the premises of the former may be considered entirely adequate for their purpose, the sufficiency and validity of the assumptions employed by the latter are somewhat more open to question.

Granted this interpretation, there need be no fundamental conflict between the two studies, since, despite some similarity in premises, they cover essentially different grounds. The only point where they clash appears to be, as already mentioned, in the assumed consequences of a divergence between desired saving and desired investment. There Mr. Harrod assumes desired savings are always attained, and Prof. Samuelson assumes investment aims are invariably achieved.

At this point I should like to present an alternative model of my own which attempts to resolve this difficulty, and which may have a few other advantages in approximating reality. This construction is offered primarily as an alternative to that of Prof. Samuelson.

I assume that output (income) during any period is based on producers' estimates of consumer and investment demand. Consumer demand is based, as in Prof. Samuelson's analysis, *on income* in the previous period and is thus equal to $mY(t-1)$,

but producers' estimates of what consumption demand will be are based *on consumption* in the previous period. Thus the producer estimate of consumption demand is :

$$C(t) = mY(t-2) \quad . \quad . \quad . \quad . \quad (1)$$

Producers' estimates of investment demand are also based on the experience of the immediate past, giving us for this magnitude

$$I(t) = A(Y(t-1) - Y(t-2)) + KY(t-1) + L + R(t) \quad . \quad (2)$$

where $A(Y(t-1) - Y(t-2))$ represents estimated "acceleration" capital demand, $KY(t-1)$ represents that part of estimated investment demand proportioned to the level of output, and L represents that part of estimated investment demand independent (at least in the short period) of the level of output. $R(t)$, on the other hand, is an essentially new sort of element representing allowance for net investment demand not satisfied in the preceding period. We shall return to this quantity presently.[1]

We have then, adding (1) and (2), our fundamental equation :

$$Y(t) = mY(t-2) + A(Y(t-1) - Y(t-2)) + KY(t-1) + L + R(t) \quad . \quad . \quad . \quad . \quad . \quad (3)$$

from the identity, output equals output produced for consumption plus output produced for investment. I shall now seek to eliminate $R(t)$ from this expression.

The amount saved (and hence actually invested) during period $t-1$ is again, identically, income minus consumption during that time, *i.e.*, it is

$$Y(t-1) - mY(t-2) \quad . \quad . \quad . \quad . \quad (4)$$

since I assume actual consumption (as contrasted with producers' expectations as to its magnitude) to depend on income during the preceding period. But the new capital that investors would actually like to have obtained during that period is

$$A(Y(t-1) - Y(t-2)) + KY(t-1) + L + R(t-1) \quad . \quad (5)$$

where $R(t-1)$ is the unsatisfied capital demand remaining from the preceding period, $(t-2)$. Note that unlike producers' estimate of investment demand, actual investment demand is based on data involving no time lag.

Since $R(t)$, unsatisfied investment demand during period $t-1$, is the difference between investment demand and actual investment during that period, we get, by subtracting (4) from (5),

$$R(t) = A(Y(t-1) - Y(t-2)) + KY(t-1) + L + R(t-1) - Y(t-1) + mY(t-2) \quad . \quad (6)$$

[1] A similar device is employed by Lundberg, *Studies in the Theory of Economic Expansion*, Ch. IX, Sect. II.

We may now attempt to interpret $R(t)$ more fully. Divergences between desired saving or desired investment and the investment actually achieved may arise for various reasons. For one thing, unexpected events may occur which arise, so to speak, from causes outside the system. Thus, for example, undesired investment in the form of accumulation of stocks may be caused by a sudden change in consumer preferences which cannot be catered for at once, and which consequently causes widespread temporary abstention from consumption, in the expectation that it will presently be possible to get the desired product, or to get it more cheaply. Such divergences between desires and attainment arising from exogenous causes have still not been provided for. However, we have attempted to provide for those divergences which arise because the economy itself is not stationary, and hence are inherent in the operation of the system. These divergences arise essentially because anticipations, and hence decisions, are based on the experience of the past, whereas it is actually the situation which obtains at the time the decision is actually being made which is of primary importance.

In this system there arises the possibility both of undesired investment and of undesired saving. Undesired saving may occur because consumers base consumption plans on previous income—so if income changes, they may be left with some unexpected income and hence unexpected saving. Indeed on our assumptions unexpected saving must be equal to the difference between income during the current and previous periods.[1] Undesired investment, on the other hand, may arise because producers have made provision for investment demand on the basis of investment or consumption demand in the preceding period, and in fact either or both of these demands may have changed. An increase in investment demand will thus tend to result in unsatisfied investment demand. An increase in consumption goods demand will also tend to cause unsatisfied investment demand (depletion of stocks). It is the sum of these effects of unanticipated investment and consumption demand which constitutes total unsatisfied investment demand resulting from the events occurring during that period. And it is the cumulative sum of these, *i.e.*, the sum of all the past investment demands which have been left unsatisfied, minus the sum of the past undesired investment that I have called $R(t)$. Thus $R(t)$

[1] Note that this does not hold for *undesired* saving since the unexpected income may cause saving desires to change and so part of the unexpected saving need not be undesired.

represents the accumulated deficiency of investment (positive or negative) resulting from causes endogenous to the system.

Returning to our calculations, we obtain from (3), (substituting $t-1$ for t throughout),

$$Y(t-1) = mY(t-3) + A(Y(t-2) - Y(t-3)) + KY(t-2) + L + R(t-1)$$

and substituting this for the next to last term in (6) we get

$$R(t) = A(Y(t-1) - Y(t-2)) + KY(t-1) + L + R(t-1) - (mY(t-3) + A(Y(t-2) - Y(t-3)) + KY(t-2) + L - R(t-1)) + mY(t-2)$$

or, rearranging and cancelling out,

$$R(t) = A(y(t-1) + Y(t-3) - 2Y(t-2)) + K(Y(t-1) - Y(t-2)) + m(Y(t-2) - Y(t-3)) \quad . \quad . \quad . \quad (7)$$

Substituting this for $R(t)$ in the fundamental equation for our model (3), we obtain

$$Y(t) = 2mY(t-2) - mY(t-3) + A(2Y(t-1) - 3Y(t-2) + Y(t-3)) + K(2Y(t-1) - Y(t-2)) + L$$

which is a third-order linear-difference equation with constant coefficients giving the national income during any period in terms of the income of the three immediately preceding periods. Thus if we are given the national income during periods $t-1$, $t-2$ and $t-3$, we may calculate income during t. This together with the income during $t-1$ and $t-3$ enables us to predict the national income during period $t+1$ and so on. Thus by repeated computation, assuming the validity of the assumptions, we are enabled to predict the national income during any subsequent period.

The course that income will in fact take (according to the equation) will again depend primarily on the magnitude of the constants m, A, K and L.[1] Besides the six general possibilities arising in Prof. Samuelson's model, there arises for each of Prof. Samuelson's cyclical cases the possibility of a similar cyclical pattern through time, but one exhibiting an upward or downward trend. This trend itself may be explosive, with the "average" level of income going upward or downward at an ever increasing rate or the trend may asymptotically approach a constant level. It remains then for an empirical study to find values for the constants which seem to conform reasonably with reality, and the equation can then be used in analysis of the course of the national income at least for a relatively short stretch of time.

[1] Of course the result also depends on the magnitude of the national income during the three periods taken as initial.

IV

I should like to conclude with a few remarks on the significance of the sort of model of the economy obtained with the use of difference equations. It should be noted that if instead of constant coefficients we employ variables (whose variation is assumed to follow some definite pattern) or if the number of periods we take to be involved in our difference equation is substantially increased, the number of possible patterns which may be exhibited by our model will multiply rapidly.

Now it is no doubt true in reality that the coefficients we have taken to be constant in our analysis are to the extent that they are not altogether hazy and indefinite, usually not constant.[1] Thus, for example, there seems to me to be little doubt that it involves a heroic assumption to take the multiplier as invariant with time and the level of national income. Moreover, the conduct of producers is sometimes unquestionably directly influenced by events preceding those occurring within "the two immediately preceding periods."

Nor is the response of output to changes in anticipated demand always as immediate as we have tacitly assumed. Under various circumstances, lags of different duration will result from the fact that it takes time to make adjustments in the level of output.[2]

Nor indeed is there, as we must assume for this type of analysis, any unique time quantum which we can take as the period relevant to the operation of every part of the economy. All these considerations suggest that the limited number of possibilities exhibited by the models here considered has nothing to do with reality.

Yet it does seem to me that there is some ground for maintaining that such a model can represent reality with a fair degree of approximation. For one thing, if we choose our unit of time sufficiently small, we may argue that the decisions of producers may indeed be considered as the independent determinant of output, for some time is required before changes in data affect the production plan and so for a small period we can consider that plan to be fixed. Moreover, it seems reasonable that output will

[1] For the results of the use of an L which shows cyclical variation instead of being constant cf. the interesting article by E. G. Bennion, "The Multiplier, The Acceleration Principle and Fluctuations in Autonomous Investment," *Review of Economic Statistics* (1945). Mr. Bennion has promised to produce another paper showing the results of the introduction of cyclical variation in some of the other coefficients.

[2] Cf. J. R. Hicks, *Value and Capital*, Ch. XVI.

then be set at the quantities producers believe they will be able to dispose of at a price they consider reasonable.[1] These estimates will presumably be based to a large extent on the experience of the immediate past. If this argument holds, then we may indeed expect our model to be not entirely unrealistic, for our assumptions amount largely to no more than a somewhat more rigid version of the line of argument followed in the preceding sentences.

Thus even if such a model cannot claim to represent reality itself, it may perhaps be hoped that it is a reasonable approximation, and one whose workings are sufficiently simplified to be readily amenable to analysis.

For one thing, we may conclude at once that even if the complexities exhibited by the real world did not substantially affect the operation of the economy, cyclical behaviour would indeed be a distinct possibility. This suggests that a capitalist system exhibiting no cyclical fluctuations in national income might require just as much explanation as one which does in fact involve them.

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[1] There does indeed appear to be mounting evidence that for a large part of business calculation and planning it is the concept of a " reasonable price " including allowance for some " reasonable " profit over cost which is employed.

THE STRUCTURE OF THE BRITISH ALUMINIUM INDUSTRY

THE British Aluminium Industry is relatively young and has still the managerial and technical drive of a rising industry. It is an industry highly integrated, vertically as well as horizontally. At the same time, the dangers of ossification created by this structure are counteracted by a continuous flow of new inventions and by the competition of other countries such as the U.S.A. and Canada which can produce at lower costs and thus counteract the tendency towards "smaller output at higher prices." Finally the destruction of the German aluminium industry according to Allied decisions partly eliminates a competitor which was acquiring foreign markets with the help of dumping methods, irrespective of costs of production.

The chief influence of the war on the British aluminium industry was not so much on the output of virgin aluminium, which roughly doubled—a peak output of 56,000 tons in 1943 against 25,000 tons in 1939—as on the growth of the aluminium manufacturing facilities which expanded fourfold during the war (313,000 tons in 1943 against 64,000 in 1940). Britain became thus one of the world's largest light metal fabricators. This development took place in spite of air raids and of the damage caused to plants.

The relative importance of the different products in the manufacture of aluminium goods can be seen in the following table :

Production of Fabricated Aluminium in the U.K. in 1,000 *long tons*

	Foil.	Sheet and Strip.	Extrusions.				Castings.	Forgings.	Powder.[2]	Total.
			Bars and Sections.	Tubes.	Wire.	Total.				
1940 [1]	0·5	27	14	1·5	0·8	16	15	8	—	64
1941	0·8	60	40	4·3	2·0	46	32	21	—	160
1942	1·8	85	66	6·2	2·6	75	47	31	3·3	243
1943	3·8	104	88	7·2	3·1	98	59	43	5·1	313
1944	4·3	94	68	5·2	3·1	76	54	39	19·7	287
1945	4·2	58	27	1·5	0·9	29	34	9	16·1	150
1946	5·0	100	30	1·6	1·1	33	35	2·2	—	173
1947 [3]	—	144	—	—	—	38	42	2·3	—	233

[1] Second half-year. [2] For direct military purposes. [3] Estimated.

Great Britain had thus a total war output of fabricated aluminium of some 1,200,000 tons. This compares with only 200,000 tons of home-produced primary aluminium and indicates the extent in which the fabricating industry has grown out of proportion to primary production and has become dependent on foreign supplies of ingot.

In the post-war period the output of sheet and strip is surpassing—in 1947—the war-time peak by almost 40% and it is considered possible that present demand for rolled aluminium products may be doubled within the next ten years. With regard to extrusions (bars, sections, tubes, wire), post-war demand fell considerably short of war-time productive capacity and part of the plant, especially the heavier types of extrusion presses, are now laid idle. Even if present demand were doubled over the next decade, the war-time peak of 100,000 long tons annually would not be reached. As far as forgings are concerned, hardly any use can be made at the moment of the existing productive capacity which during the war had reached an annual rate of 43,000 tons, but here, too, an expansion of demand is expected.

While traditional basic industries—such as coal-mining or iron and steel—suffer from the preponderance of out-of-date plant, machinery and working conditions, the expansion of the light alloy industry was based on modern methods of production. Although no data are given, horse-power per man seems to be of a very high magnitude. Little information is available to indicate how the costs of modernisation and expansion were shared between Government and industry or how far direct subsidies or high prices in Government contracts influenced the distribution of costs. Thus it is difficult to say to what extent costs of production are still burdened by depreciation allowances for the new plant.

Generally, it seems, the Government financed the erection and extension of works and had the plants operated by private firms. After the war the plants were sold to private enterprise, but the purchase price and conditions of sale have not been made known. Plants which could not buy electricity from the grid system were closed down as they proved too expensive for peace-time production. As far as price-subsidies are concerned, a statement made in the House of Commons on November 18, 1947, suggests that aluminium is at present subsidised with some £25 per ton (as £750,000 have been paid for an output of some 30,000 tons).[1]

[1] In the financial year 1947–48; other metal subsidies paid by the Government were: iron and steel: £mill. 7·5; magnesium £250,000; ferro-chrome £100,000.

The vast capacity of the light alloy fabricating industry can only be used if it can produce at competitive prices. As the production of primary aluminium is more expensive in this country than in the U.S.A. or in Canada, it would be of great advantage if the British fabricating industry could produce more efficiently than that of other countries. The structure of the aluminium industries in Canada and U.K., the relation between primary production and fabricating capacity in each of the two countries is actually the decisive problem facing this industry. Should this country rely on the import of primary aluminium from Canada where it is produced more cheaply, and close down primary output in this country so that the fabricating industry obtains virgin ingots at lowest cost? According to the principles of free trade based on comparative costs this is obviously the right thing to do. But can the fabricating industry of any country really be expected to become voluntarily entirely dependent on an outside source for its supply of ingots? If the primary aluminium industry in this country is maintained, the question arises how it can be protected against cheap imports without international trade complications arising. High duties may only lead to retaliation against the export of the British fabricating industry, while a direct State subsidy to a specially selected private enterprise is always subject to objections. Two ways seem open to meet these difficulties. Either primary production is nationalised, profit margins reduced to a minimum, and the costs of risk and research borne by the State which would also carry any loss if ingots had to be sold below costs of production in order to compete with imported ingots; or—and this is more likely to happen—preference is given to the maintenance of a private enterprise which proved enterprising; then the British output of ingots could be used in Government orders for ships, aeroplanes, railways, bridges, lorries, buildings, etc., wherever the fabricating firms would not have to compete on the world market and could thus afford to pay a higher price for ingots. Ingots needed for the production of fabricated goods to be sold on the open market could be imported from Canada. In this way the bargaining position towards Canada would be preserved. Much depends on Canada's policy towards the fabricating side of the aluminium industry. The solution most favourable to this country would be if Canada agreed to sell the bulk of their primary aluminium to Great Britain,[1] which assisted so greatly in the establishment of this

[1] The U.S.A. are not likely to import great quantities of Canadian aluminium in peace-time.

Canadian industry. Great Britain would, in this case, concentrate on the fabricating of aluminium manufacture. She would keep, but not expand, existing primary capacity and Canada would act similarly in respect to existing fabricating facilities. In this way the two countries would not be completely dependent on each other and still make the best use of their relative advantages in the different stages of production.

It is, however, doubtful if things will really develop in this direction. It seems that Canada intends to build up a fabricating industry of their own not only in Canada but also in other Dominions. It is still too early to say of what importance this industry will be and how far the Canadian primary industry will make use of the monopolistic device of selling to their subsidiary fabricating companies ingots at preferential prices. Great Britain will, for a considerable period, keep the initial advantage of the skill and experience acquired in war production, and should during the next few years be able to establish markets. But in the long run, a serious competitive struggle is likely to develop. With it the Canadian industry may tend to discriminate more and more against Great Britain in the prices charged for ingots. Therefore the decision what to do with the British primary aluminium industry is the key to all future developments. Hereby account has to be taken of developments in the field of secondary metal.

The Importance of Secondary Aluminium

Lately, secondary aluminium, *i.e.*, aluminium produced from aluminium scrap, has grown to proportions equalling and sometimes surpassing that of primary aluminium. This extraordinary phenomenon in the history of metal production could first be observed in the years of depression 1933–34, and has been particularly conspicuous in the war years.

In spite of the growing importance of the production of secondary aluminium no pre-war data relating to Great Britain are available. The census of production of 1930 gives a total which includes primary and secondary aluminium. A further complication arises in view of the inclusion of the same metal in the published figures at different stages of manufacture. In the census of production of 1935 pure aluminium and aluminium alloys are lumped together so that any precise calculation on the basis of the official figures given is hardly possible.

After the war the Light Metals Control of the Ministry of Aircraft Production made available information referring to the war. The peak of scrap consumption was reached in 1944 when 125,000 long tons of scrap arose, of which 85% were segregated, and 96,000 tons of secondary ingot produced (against 35,500 tons primary ingots). These figures exclude crashed aircraft which should account for quite a considerable quantity of additional scrap.

Use of Aluminium Scrap in the U.K., 1941–46

	"Arisings," long tons.	% segregated.	Secondary ingots.[1]
1941	66,700	70	50,000
1942	97,000	80	75,000
1943	122,000	81	88,000
1944	125,000	85	96,000
1945	71,000	80	62,000
1946	74,000	60	49,000

[1] Excluding recovery at Government Depots from crashed aircraft.

Towards the end of the war, from the autumn of 1944, probably because of the desire to safeguard the production of primary metal, less scrap was taken for re-use and the percentage segregated steadily declined from 86% to 76% in the first quarter of 1946.

After the war, fabricating firms were using up their stocks of secondary aluminium. The expected glut of unwanted aluminium scrap arising from the war did not materialise. Actually, the Government retained considerable stocks for the prefabricated aluminium house, and, as after an initial heavy fall in demand in 1945 consumption of aluminium goods steadily increased, the possibilities for the use of secondary aluminium were expected to outgrow the supplies. (It has been estimated that manufacturer's scrap would cover one-fourth of aluminium ingot required by fabricating plants and founders.) Leading British producers of ingots are providing more against a shortage than against a surplus of aluminium scrap. It is quite feasible that the British aluminium fabricating industry will be short not only of primary but also of secondary metal.

For appreciating these problems it might be useful to examine shortly the history and present structure of the British aluminium industry.

Production, Consumption and Imports of Virgin Aluminium [1] *in U.K.*, 1935–46

(1,000 tons)

Year.	I. Production.	II. Imports.	III. Current supplies.	IV. Consumption.	V. Imports as a percentage of consumption.
1935	15·00	18·00	33·00	33·60	54
1936	15·96	21·72	37·68	38·40	56
1937	18·96	31·56	50·52	39·60	79
1938	23·04	46·20	69·24	44·40	104
1939	24·96	57·84	82·80	78·00	74
1940	18·96	66·24	85·20	102·00	65
1941	22·68	137·64	160·32	116·40	118
1942	46·80	136·08	182·88	195·60	70
1943	55·68	213·00	268·68	207·60	102
1944	35·52	151·68	187·20	150·00	102
1945	31·92	21·72	53·64	99·60	22
1946	31·56	91·92	123·48	116·40	79
1947 [2]	32·00	—	—	150·00	—

[1] Including pure content of virgin alloys.

[2] Estimated.

Source: *Monthly Digest of Statistics*, December 1947, Tables 35 and 108.

Total Supply of Ingots and Manufacture, U.K., 1939–45

	1939.	1940.	1941.	1942.	1943.	1944.	1945.	Total, 1941–1945.
Production of primary aluminium.	25	19	23	47	56	36	32	194
Imports of primary aluminium . .	58	66	138	136	213	152	22	661
Production of secondary aluminium . .	N.A.	N.A.	50	75	88	96	62	371
Total primary and secondary . .	—	—	211	258	357	284	116	1,226
Production of fabricated aluminium.	—	64	160	243	313	287	150	1,153

Sources: *Monthly Digest of Statistics*, December 1947; Ministry of Supply, Press Notices; Ministry of Aircraft Production, Light Metals Control, Quarterly Statements.

The British Aluminium Company

A century passed before the attempts to obtain pure aluminium were crowned with commercial success. Although Sir Humphry Davy had carried out his experiments as early as 1807, it was not till 1855 that aluminium was shown for the first time in this country by the firm Dick and Smith, at the Royal Institution.

Soon afterwards production was begun on a commercial scale by several firms. However, all of them had to close down again:

P. W. Gerhard at Battersea, London (with the Deville process)	? –1863
Bell Brothers at Washington, near Newcastle-on-Tyne	1860–74
Aluminium Crown Metal Co. (Deville process)	1881–82
Merged in 1887 with Aluminium Co., Ltd. Operated plant at Oldbury, near Birmingham (Castner's process)	1888–91
Cowles Syndicate at Milton, Stoke-on-Trent, Staffs.	1890–93
Metal Production Syndicate works at Patricroft, Lancs.	1890–94
Alliance Aluminium Co., Ltd., Wallsend-on-Tyne	1889–

The British Aluminium Company had to close down twice before it was established on a firm basis.

This company was founded in 1894, and was to become one of the world's largest producers of aluminium. With the acquisition of the British and Colonial rights in the Herault and Bayer patents the company succeeded in dominating the British Aluminium industry. To-day the company controls, directly or indirectly, the greater part of British output of alumina and aluminium, and is engaged in practically every branch of the industry, from the working of the crude ore (bauxite) to the final product.

The company started the first hydro-electric works in 1896 at Foyers, Inverness-shire, on the Caledonian Canal. At that time, an initial production as small as some 200 tons per year did not find a ready market.

Gradually, the output of aluminium was increased to 350 tons.[1] Bauxite deposits were acquired in County Antrim, Ireland, but it was soon realised that Irish bauxite was too impure, containing only 35% of alumina but 15% or more of silica. This low-grade ore proved commercially unprofitable, Irish bauxite was abandoned, and large deposits in Southern France were acquired.

The erection of Scottish power plants had required high capital expenditure. When sharp competition of French and Swiss producers coincided with falling prices, the company had to declare a default on its debentures which it had issued to finance the initial investment. The company was reorganised and, protected by the International Cartel, succeeded in making small profits.

In 1907 work on the second large power plant at Kinlochleven

[1] In these days, aluminium was still used in a way similar to gold. Stocks were packed in small quantities as security for Bank loans. Technical knowledge about the properties of aluminium was still in such a rudimentary stage that neither debtors nor creditors knew in what condition they would find the aluminium when re-opening the wooden boxes: would aluminium be still aluminium, or would it, by oxidation, have been reduced to its previous stage, and become again alumina.

Argyllshire, was started, and the main plant completed in 1909. Later on a factory for producing carbon electrodes was added. During the trade depression of 1908–1909 the company failed, but was revived in 1910 and ever since has developed steadily. Works for producing alumina (*i.e.*, refining bauxite) were built in 1913 in Burntisland, Fifeshire, close to the Fife coalfields and the harbour. (Coal is needed for the treatment of bauxite, and port facilities for the import of bauxite, and after treatment, for the export of that alumina which is to be smelted in Norway.) At Warrington, Lancashire, also in 1913, a rolling-mill was erected which was the largest in the country. Another rolling-mill owned by the British Aluminium Company, is situated in Milton, Staffordshire, and a smaller one belonging to the Aluminium Corporation, in North Wales; the Northern Aluminium Company, controlled by Aluminium Ltd., Canada, is operating a mill in Banbury.

After the alumina works at Burntisland had been enlarged up to the boundaries of their property, a new alumina plant was erected at Newport, Monmouthshire, in 1937, in addition to the alumina works at Larne, County Antrim, and production started in April 1939.

Before the outbreak of war, the company suffered considerably under foreign competition. True, import duties were introduced in 1932 and increased in 1935 from 10% to 15% on rolling-mill products and to 20% on aluminium foil, but this protection was not adequate. Germany, in particular, used her increased sales quota to dump, by means of Government subsidies, aluminium products in this country at prices which were less than 70% of those charged to her own consumers, even including duty, freight, and other charges. The sales of the British Aluminium Company naturally suffered under this practice, yet Great Britain did not follow the example of other countries which had erected strong customs barriers.

On the outbreak of war, the Ministry of Supply bought the whole production of ingot aluminium and, as sole distributor, resold it to the British Aluminium Company for her rolling-mills and for making alloys. The prices were based on the pre-war level in this country taking account of increased costs.

After the war the company purchased plants which they had operated on behalf of the Government during the war as, for instance, the refinery and powder works erected near their rolling-mill at Warrington, Lancashire, for the production of secondary aluminium alloys. The plant is said to be one of the most modern in the country. The Falkirk rolling-mills which the British

Aluminium Company also bought was the latest aluminium plant erected during the war producing sheet and coil in all alloys and of very large sizes.

In November 1946 the company together with the Hawker Siddeley Aircraft Company and Tube Investments Ltd. formed the Wire and Cable Company as a private company with an authorised capital of £500,000.

Subsidiaries of the British Aluminium Company in Britain

The interests of the British Aluminium Company include many subsidiaries, some in Great Britain, some in the British Empire, others in foreign countries. The mother company either fully owns these subsidiaries or exercises control via the ownership of share capital and/or common directorships. The subsidiaries include :

(1) The British and Colonial Bauxite Company Ltd.
(2) Gold Coast Bauxite Company Ltd.
(3) The Alumina Company Ltd.

The entire share capital of the North British Aluminium Company is in the hands of the British Aluminium Company. The subsidiary was formed in 1924 with the aim of erecting aluminium works at Lochaber, Inverness-shire, the biggest aluminium producing unit in the U.K., where production started in 1929. A special Parliamentary Act was necessary for this project and became known as the Lochaber Water Power Act of 1921.

In 1937 plans for the extension of the works were completed and subsequently carried out in three stages. After the end of the second stage, the annual capacity of aluminium production by the British Aluminium Company amounted to 30,000 tons. In 1940 British output totalled 28,000 tons, in 1942 was estimated near 35,000 tons, and towards the end of the war at some 50,000 tons. When, in 1938, the first half of the extension was operating, special Royal Assent was obtained prolonging the time for the completion of the project for another seven years. The power plant at Foyers was enlarged in 1935.[1]

In addition to the works for the refining of bauxite and the production of pure aluminium and aluminium manufacture directly owned by the British Aluminium Company, there are

[1] Altogether some £8,000,000 were spent on the three reduction works in Scotland where the Company owns over 130,000 acres.

many establishments in all stages of production controlled indirectly by that company.

Since 1928–29 the British Aluminium Company has had considerable shareholdings in Metal Manufactures Pty, Ltd., the Acme Tea Chest Company and James Booth and Company, share capital £1·25 million. It has shareholdings also in the Empire Aluminium Company and owns the entire share capital of the Loch Leven Pier Company, the Loch Leven Electricity Supply Company, the Lochaber Power Company and, as mentioned above, the North British Aluminium Company, share capital £1 million. It ownes William Mills Ltd. and manages the Aluminium Corporation Ltd. Together with the Imperial Smelting Corporation (authorised share capital £7·5 million) the British Aluminium Company owns Imperial Magnesium at Rainham, Essex. Jointly with the National Smelting Company, a subsidiary of Imperial Smelting Corporation, the British Aluminium Company controls the Aluminium Sulphate Ltd. Substantial holdings in the Imperial Magnesium Corporation Ltd. enabled them to participate in a subsidiary company, the Magnesium Metal Corporation Ltd. which started the production of magnesium at a plant at Swansea in 1939, but has closed down meanwhile.

In October 1938 the South Wales Aluminium Company was established as a private company with a capital of £500,000. In this enterprise intended to serve the production of aluminium in South Wales the British Aluminium Company co-operated with the Aluminium Company of Canada and the Swiss A.I.A.G. (capital 10 millions Swiss francs). The works are situated near Resolven, Vale of Neath, Glamorgan.

Subsidiary Companies Overseas

The interests of the British Aluminium Company spread also overseas. Two Indian subsidiaries, the Aluminium Manufacturing Company Ltd. and the Wolverhampton Works Company Ltd. should be mentioned as well as a subsidiary in the U.S.A., the Aluminium Transatlantic Incorporated. A Swiss subsidiary is the Compagnie du Chemin de Fer Mortigny–Orsieres. The attempt, however, to build power works in Switzerland had to be abandoned as the Swiss Aluminium Company (A.I.A.G.) objected on the grounds that thereby an earlier contract (of 1895) which limited the use of the then new patents to the U.K. and her colonies would be violated.

The endeavour to control and own the necessary raw material resources led to the acquisition of large bauxite deposits in the south of France. Before World War I, the company took possession of the Union des Bauxites, one of the two largest bauxite companies in France.

The cheap water power in Norway which made the production of aluminium in Norway economically attractive, in spite of the necessary transport of the ore, led to the establishment of companies [1] controlled by the British Aluminium Company. After the smelting process was completed the aluminium was either re-imported to Great Britain or sent directly from Norway to foreign importers of British goods, thus avoiding the payment of duties in this country. The company has also a share in a Norwegian factory producing carbon electrodes. In addition it owns works in Ireland.

Other Companies

While the British Aluminium Company is the only producer of virgin aluminium, it shares its leading position in the rolling of sheet and strip with the Northern Aluminium Company Ltd. which is also one of the dominant firms in extrusions. (Rolled and extruded products account for some two-thirds to three-fourths of all fabricated aluminium.)

This competitor is a subsidiary company of the Aluminium Ltd. of Canada. The importance of the latter company can be gauged from the fact that it controls Canadian ingot output, which in 1943 had reached a war-time peak of 500,000 tons, or nine times the quantity of primary aluminium refined in Great Britain in that year. With so great a superiority in output—and also in costs of production—the Canadian company will

[1] The above-mentioned Norwegian companies are :

The Electro Kemiske Fabrikken with a plant at Stangfjord, productive capacity some 500 tons.

The A/S Vigelands Brug producing annually some 4,000 tons.

The A/S Haugvik Smelteverk, with works at Glomfjord, built in 1928 and producing some 4,000 tons annually. The status of this company is of a rather complicated nature. It is a subsidiary of Aluminium Corporation, Ltd., and of the International Aluminium Company, and is operated by the British Aluminium Company on behalf of the Alliance Aluminium Company.

Det Norske Nitrid A/S (D.N.N.) with plants at Eydehavn and Tyssedal, with an annual productive capacity of 20,000 tons. The Aluminium Ltd., a Canadian holding concern, closely connected with the Aluminium Company of America, owns one-third of this firm, while another third belongs to French producers who participated some twenty-five years ago in the establishment of the plant. The British Aluminium Company owns the last third since 1923.

have a decisive influence on the aluminium market of the U.K. and of the Commonwealth.

In addition to their control over the Northern Aluminium Company, the Canadian company obtained minority holdings in the South Wales Aluminium Company Ltd. (25%), in the International Aluminium Corporation Ltd. (25·94% common, 6·86% preference), in the Aluminium Corporation Ltd. (16·89% ordinary and 28·57% "A" shares), in the Alliance Aluminium Holdings Ltd. (28·57%) and in the Unity Investment Trust Ltd. (28·57%).

Plans of the Northern Aluminium Company include a £5,000,000 expansion at the Rogerstone mills and a $10,000,000 continuous-type rolling-mills near Newport which would obtain its ingots mainly from the Canadian mother company. If this scheme should be completed, existing peak capacity for the production of aluminium sheet would be increased by 65%.

Of other firms engaged in fabricating aluminium products, James Booth and Company Ltd. should be mentioned in which the British Aluminium Company has considerable holdings. The firm is prominent in rolled,[1] extruded and forged aluminium products. Other leading firms include I.C.I. Metals [2] (forgings and extrusions), High Duty Alloys Ltd. (forgings, extrusions), Baldwins Ltd. (sheet and strip) and Reynolds Rolling Mills Ltd. (sheet and strip, extrusions).

Several groups have been formed such as the Birmid Industries group which contains the Birmetals Ltd. (sheet and strip, extrusions, forgings) and the Sterling Metals Ltd. (castings).[3] The Tube Investment Group has a series of subsidiaries such as the Reynolds Tube Company Ltd., the Reynolds Rolling Mills Ltd., closely associated with the High Duty Alloys Ltd., Slough. This group acquired two light alloy plants near Redditch, Worcestershire, from the Ministry of Aircraft Production.

In May 1947 a new and large British merger was formed whereby Tube Investments and Hawker Siddeley Aircraft merged those of their subsidiary companies which are connected with the manufacture of aluminium. This combination which was pre-

[1] Excluding rolled aluminium foil in which several smaller firms specialise (such as Venesta Ltd., Star Aluminium Ltd., Acme Tea Chest Co. Ltd., etc.).

[2] After the end of war they bought from the Ministry of Aircraft Production a plant at Swansea for the manufacture of wrought alloys which it had operated on behalf of the Ministry.

[3] Most of the thousand or so firms with foundries for casting aluminium are of small size, but some 100 firms account for the bulk of the output. Some big firms, such as Metropolitan Vickers, English Electric Co., British Thompson-Houston, Rolls Royce, etc., have their own aluminium foundries absorbing the whole output for their final products.

ceded by an unofficial working arrangement between these firms, developed during the war, and should result in a better use of existing technical resources.

Still another group, the Almin Ltd. (Associated Light Metal Industries) had been established after the end of war, with the help of two financing houses, Lazard Brothers and Company and Erlangers Ltd. and had started with a capital of £2,000,000. Through subsidiaries and associated companies Almin Ltd. will be vertically integrated, comprising all stages of production from refining to the finished product. The group includes the largest British producer of high quality secondary light alloy ingots, and one of the biggest remelting concerns in the country,[1] the International Alloys Ltd. and its subsidiary, the Light Alloy Production Ltd. Other firms incorporated into Almin Ltd. are the Southern Forge Ltd., the Renfrew Foundries Ltd. and the Warwick Aviation Ltd. The Renfrew Foundries Ltd. are a new concern created jointly by Colonel Devereux and Rolls Royce Ltd. which acquired the aluminium alloy foundries at Glasgow operated during the war by Rolls Royce. There foundries are thought to be larger and better equipped than any in Europe. There is every likelihood that an industry so highly modernised and integrated can produce high quality at low cost if it is desired or necessary to do so.

But low costs are only possible if high output can be assured. For this purpose—that is, in order to help create the market necessary for using the productive capacity available—the "Aluminium Development Association" has been formed. This association is interesting in so far as it expresses the development towards collective industrial and market research previously carried out by individual firms.

Conclusions

Aluminium has moved into the first rank among non-ferrous metals. The whole pre-war set-up of the light metal industry has to-day been superseded. The cartel which determined output, sales and price for the greatest part of aluminium production has been dissolved and it is very doubtful if it will reappear. One of the chief members of the cartel and, in peace-time, the largest producer—Germany—no longer owns a single aluminum

[1] Some forty firms refine secondary ingots with about five firms leading in this field, for instance, Enfield Rolling Mills, the British Aluminium Company, B.K.L. Alloys, Ltd., and T. I. Priestman, Ltd.

plant, as a result of military disarmament. Her place as main producer has been taken by an "outsider," the U.S.A. Another outsider, the U.S.S.R., as a result of her own five-year plans, of output in German-occupied territory and in the belt of border-line countries, will move up to the third place [1] among producers and will possibly enter the export market on an extensive scale.

In various parts of the British Empire the production of aluminium has been begun and the growth of the primary aluminium industry in Canada has thrown into the shade the development in her Mother-Country—or in any of her Sister Countries. Great Britain not only doubled her productive capacity for primary aluminium but making use of her tradition as a manufacturing nation and of all the skill going with it, has expanded greatly the facilities for the manufacture of semi-finished and finished aluminium and magnesium goods.

Owing to the intensive research financed by the various Governments and carried out all through the war, great technical progress was made in three directions: in the use of low-grade ores, in alloying processes and in the recovery of scrap. The newly developed methods to obtain aluminium from low-grade ores may greatly change the relative position of bauxite producing countries and may especially affect traditional bauxite (high grade) exporting countries in the Western Hemisphere such as British and Dutch Guiana which during the war had more than trebled their output. The results of research in alloying aluminium and magnesium with other metals have made it possible to obtain light metals possessing almost any quality needed. The newly discovered methods of segregating and recovering scrap have considerably influenced the relation between the quantities and therefore between the prices of primary and secondary metal.

Technical improvements, together with the large scale of production and the treatment of capital expenditure for plant and equipment as part of current war expenditure, led to a reduction in costs and in prices. This was the position at the end of hostilities.

With the beginning of the transition period the war-time strength has appeared as a peace-time weakness. The large productive capacity for primary metal and the increased use of scrap raised once more the dreaded spectre of surplus capacity and surplus stocks. The very factories built overseas with the help of British capital during the war have now become a com-

[1] The second place being held by Canada. In 1946, the U.S.A. produced 370,000 tons, Canada 175,000 tons, and the U.S.S.R. some 90,000 tons.

petitive threat. The provisions of mutual lend-lease have given way to the severe conditions of the American loan, and to Bretton Woods.

It is with this background in mind that we have to look into the future. British primary production will face competition from overseas where, thanks to larger scale operations, the metals can be produced at lower costs. The British light metal manufacturing industry will therefore have to be efficient enough to be able to balance this initial higher expenditure at the next—that is, the manufacturing—stage. Continued research much above pre-war level and comparable with that in any other country will be essential for maintaining the industry's competitive strength. Smaller firms and even larger firms may, if the need can be established, receive support by the Government for this purpose.

In view of the links of the Canadian aluminium industry with this country (apart from its relations with the U.S.A.), and of the mutual interest of Canada and Great Britain to base their trade on a useful division of labour, some agreement could be aimed at leaving primary production mainly to Canada, and manufacturing to Britain. In this way both countries would be well served and a competitive struggle within the Empire and outside avoided.

During the period immediately after the war with a shortage of goods all over the world and prosperity in the manufacturing countries no serious competitive struggle will develop. Prices are of minor importance as long as goods are delivered speedily and high employment in the industrial countries is maintained chiefly by the pressure of pent-up home demand. Once these special conditions of the transition period have passed and the overseas markets become saturated and home demand is slackening an intensified drive for exports markets can be expected. Whenever the American semi-inflationary boom breaks, the "cure" for a rapidly rising curve of unemployment will probably be sought by forcing exports up.

Britain will derive her bargaining strength on the aluminium market from its position as the largest purchaser of virgin aluminium, while her chief weakness will be the relatively high cost of production. Britain's main competitors will be Alcoa, the world's greatest producer of light metals, and the Aluminium Ltd. of Canada, the second greatest producer which is also under strong American influence.

It will largely depend on technical ingenuity and commercial

enterprise how far Britain will be able to retain the markets which it is supplying at the moment. The use of aluminium in overseas markets is still an unexplored field; the industrialisation and development of backward countries coinciding with the development of a more or less new raw material—light metals—opens up unlimited possibilities. The export of aluminium houses, the construction of new bridges, the equipment of foreign armies, and air forces, electricity schemes, etc., offer markets of a considerable magnitude.

Apart from exports, demand for light metal products may expand even at a time when national income remains stagnant or declines. As soon as a sufficiently low price is added to the other advantages of light metals—weight, appearance and suitability for alloying—competition with other metals, above all, with steel, tin and copper will grow in intensity. For the time being there is sufficient room for all these metals, but a shift in their relative importance is bound to develop.

The reduction of the price of light metals is largely linked with the cheapening of electric power. Here, this country has still a long way to go; but with the modern development of industrial chemistry and of synthetic production cheap electric power has become so important for the economy as a whole that steps in this direction are likely.

In the not too distant future it can be expected that the major industries—building, engineering, transport, armaments and a series of other industries—will use light metals on an extensive scale. And it is probable that this revolutionary change will take place at a relatively small cost to the community. Although the light metal industry is highly concentrated in each country, the competition with other metals and between different countries (which, for several reasons, can no longer be subjected to control by one cartel) provides a certain guarantee that the choice between a smaller output at high prices and a higher output at low prices will fall in favour of the latter alternative.

The light metal industry can help to dispel the general distrust towards industries with a high degree of concentration by passing on the advantages of integration to the consuming community in the form of good wages, improved products and lower prices. By following this road the industry will more quickly and more easily advance to outstanding importance among metals.

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THE CASE FOR INDIRECT TAXATION

I

THE case against indirect taxation has long formed part of the corpus of economic theory. It is the case against a tax system which discriminates against particular kinds of purchases. Such a tax causes a loss to the society viewed as consumers over and above the gain to the Exchequer, because it makes prices diverge from marginal costs. It also causes a loss to society viewed as producers because it makes the return to the factors of production diverge from their marginal products.[1] There is therefore an advantage in relying solely on direct taxation, predominantly in the form of income taxes.[2] The only justification for indirect taxes which then remains is in cases where specific intervention by the state is required to adjust differences between marginal private and marginal social net product or where, as in the case of alcohol, it is desired to distort consumer preferences as an act of policy. On the traditional doctrine an indirect tax should never be defended on the ground that it produces revenue, since revenue can always be obtained more advantageously by the income tax, but only because its specific results are in some way valuable.

This doctrine has rarely, if ever, been implemented in taxation policy, but recently both theorists and politicians have withdrawn from it. It has been observed that high marginal rates of income tax can have a very important effect in reducing output by reducing the incentives to work; in more general terms it distorts the choice between activity which earns a money income (liable to tax) and any other activity. It is not, therefore, true that indirect taxes have an effect in distorting economic decisions while direct taxes do not. Moreover, while the loss from indirect taxation may appear to be a rather artificial construction, the loss from direct taxes, where these can be shown to produce

[1] The distinction here is conventional but convenient. The part of the analysis concerned with the loss to producers has received less attention than the consumer's surplus aspect and elaboration will have to be postponed to another occasion.

[2] See Marshall, *Principles*, 8th Edn., p. 467, J. R. Hicks, *Value and Capital*, pp. 40–41, or M. F. W. Joseph, "The Excess Burden of Indirect Taxation," *Review of Economic Studies*, June 1939.

absence from work, seems very real. It has been shown by Mr. Wald that exactly the same technique which can be used for demonstrating the excess burden of indirect taxation can also be used to show the excess burden on the taxpayer from direct taxation.[1]

This has conduced to the view that there is nothing to chose between direct and indirect taxation, in that both give rise to an excess burden on the taxpayer above the receipts to the Exchequer. But, the loss of consumers' surplus from indirect taxation may well seem a lesser evil than the reduction of the physical volume of output which is seen to result from high rates of income tax. Direct taxation is then held to be inherently more harmful to incentive than indirect taxes. This argument has been used to justify the reduction of income taxes coupled with an increase of indirect taxes in an effort to increase the supply of factors of production.

It is the purpose of this paper to suggest that this view is based on a misapprehension. Indirect taxation has the same effect as an income tax on the supply of factors, and in addition it causes a loss to consumers by distorting their preferences. The apparant advantage of indirect taxation in its effect upon incentive is due simply to the fact that a change towards indirect taxation is usually accompanied by a reduction in the degree of progression in the tax system as a whole; the same effect upon incentive with a smaller burden on the community could be obtained by a corresponding reduction in the progressiveness of the income tax.

This will be argued in the following section where, however, all the complications due to saving are ignored. These will be considered in section four.

II

Consider a consumer who spends his whole income on two products, X and W. His indifference map is shown in Fig. 1. His income is Y, which will purchase OW_0 of W or OX_0 of X. In the absence of taxation he is at the point Q_0 where the opportunity line W_0X_0 is tangential to an indifference curve. It is desired to tax him $Y.\frac{W_0W_1}{OW_0}$; this can be achieved in an infinite number of ways. An income tax can be imposed of this amount

[1] Haskell P. Wald: "The Classical Indictment of Indirect Taxation," *Quarterly Journal of Economics*, August, 1945.

or an *ad valorem* tax at the same rate can be imposed on both commodities. Both methods will have the same result of moving the opportunity line available to the consumer from W_0X_0 to W_1X_1 and the point of equilibrium from Q_0 to Q_1. But the same revenue can be obtained from an unequal rate of tax on the two commodities, yielding an opportunity line such as W_2X_2, whose point of tangency with an indifference curve lies on the line W_1X_1. There is an infinite number of tax rates which will give this result. If the equilibrium point for unequal rates of tax lies on W_1X_1 (for example the point Q_2) the required revenue is obtained, but

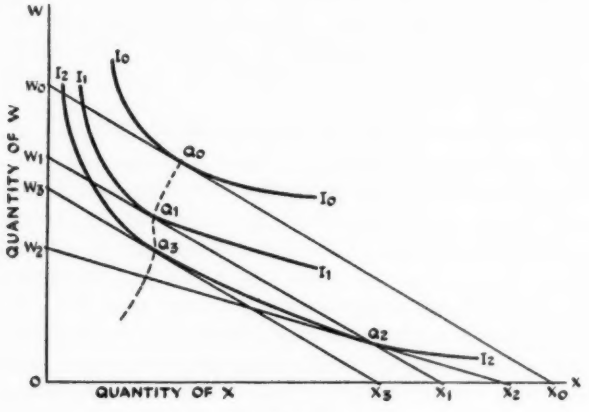

FIG. 1

all such points are on lower indifference curves than is the point Q_1. Thus the burden on the taxpayer depends on the point selected. The burden on the taxpayer can be expressed by drawing W_3X_3 parallel to W_0X_0 (and to W_1X_1) and tangential at Q_3 to the indifference curve passing through Q_2. Then the consumer is indifferent whether he is at Q_2 or Q_3, but the latter is the point which would have been reached if the income tax had been $Y.\frac{W_3W_0}{OW_0}$. The burden on the consumer is then equivalent to that which would have been imposed by the higher income tax, the receipts of the Exchequer are the same as would have been obtained by the lower rate of income tax and the difference between the two is the excess burden of the indirect tax. W_1W_3 is then the measure (in terms of W) of the burden on

the taxpayer of a discriminating tax as contrasted with an income tax.

We need these results to define a formula for a system of indirect taxes which can be compared with the formula for a system of direct taxation. So long as the indirect tax is at the same *ad valorem* rate on all goods and services, the burden of the tax must be proportional to income and there is no excess burden. But an indirect-tax system can also be progressive or regressive. In the case of two products this is possible if the income elasticity of demand is not unity for one of the products (if it is not for one it cannot be for the other). Then if the product with the higher

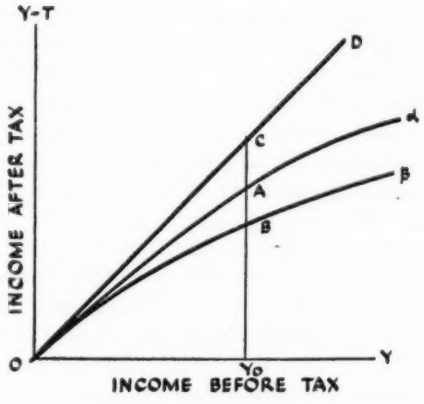

FIG. 2

income elasticity of demand has the higher rate of tax, the tax system will be progressive and in the reverse case it will be regressive. But if the tax is not proportional there will be an excess burden on the taxpayer. For any level of income and the given rates of tax we can derive, from the indifference diagram, the tax yield and the tax burden. Fig. 2 shows the relation, between income before tax and income after tax, for a progressive indirect-tax system. OD is the curve $Y - T = Y$. Then OY_0 $(= Y_0C)$ is income before tax, CA the yield of the tax to the Exchequer, BA the excess burden of the indirect tax and BY_0 the income remaining after tax. This differs from the similar diagram for an income-tax formula, in that we require two curves. The α-curve shows the yield of the tax from a person with a given income; the Exchequer is indifferent between this tax system and income tax with the same formula. The consumer

is indifferent as between this indirect-taxation system and an income tax with the same formula as β. β must always lie below α (except in the case of equal *ad valorem* taxes) and, since they both start at zero (an income of nothing pays no tax under all circumstances), it must be flatter over some part of the range. This means that over some ranges of income β implies a higher marginal rate of tax than α. It is plausible to believe that, as the yield of the tax increases in a greater proportion than income, the excess burden will also do so over the whole range of income. This, however, need not be so.

Any system of indirect taxation corresponds to two direct-tax formulæ according as to whether we look at the taxes from the point of view of the taxpayer or of the tax receiver. This has been shown in the case of two commodities, but there is no added complication, other than that of graphic representation, in considering any number of commodities.[1] When a large number of commodities are available it is comparatively easy to construct a progressive system of indirect taxation. Any precisely defined category of expenditures (that is, excluding any category of sundries), other than food and clothing, forms a very small proportion of total expenditure for people with the lowest incomes, as total expenditure increases the proportion increases until it reaches a maximum after which the proportion declines (and in some cases also the absolute amount spent). Then heads of expenditure, either individual goods or groups of goods, can be ranged in the order in which they reach their maximum relative importance in typical budgets as income increases from a low level.[2] Then the indirect-tax system will be progressive if the *ad valorem* rate of tax on any commodity is greater, the higher the income at which it reaches its maximum relative importance in the consumer's outlay. Such a system will be progressive from both points of view, both that of the taxpayer and of the tax receiver. Since the ordering of the commodities is a personal one and differs from one individual to another, the rate of progression

[1] Thus for income OW_0 (Fig. 1) the value of the α-curve is OW_1 and the value of the β-curve OW_2. Since the *relevant* opportunity lines are all parallel the values can equally well be read along the other axis. Hence if further dimensions are introduced corresponding to n commodities, the $(n - 1)$ dimensional opportunity surfaces are linear and parallel and the income after tax corresponding to both curves can be read off along any one of the n axes.

[2] See Allen and Bowley, *Studies in Family Expenditure*. This is a generalised statement of the principle to be found in Engel's Law and other special principles. In the case of food and clothing the point of maximum relative importance is found at the lowest range of budgets, so that the range of increasing relative importance does not arise.

of an indirect-tax system can only be specified for a given individual. Indeed, a system which is progressive for one person may be regressive for others. However, budget enquiries show a sufficient degree of uniformity for it to be possible to construct tax systems which are progressive for nearly every individual and over almost the whole of the tax range.

We can now turn to the other side of the problem : the supply of factors of production. This is best illustrated by the supply of effort and the exposition follows closely that of Dr. Wald.[1] Fig. 3

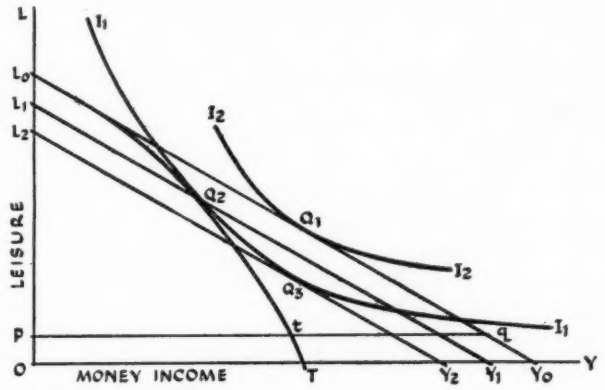

FIG. 3

represents an individual's indifference map between leisure and income. The point L_0 represents the position of idleness where no work is done and no income received, and OY_0 the income received if no leisure at all is taken. Then if a constant hourly wage is paid the opportunity line is the straight line L_0Y_0. In the absence of taxes either direct or indirect, the point of equilibrium is Q_1 where an indifference curve is tangential to the opportunity line. If a tax on income is now imposed, this can be represented by a new opportunity line L_0T. This is drawn so that for any point P on the L-axis, $0P$ represents the leisure enjoyed, Pq the income before tax and Pt the income after tax. The new equilibrium is given by Q_2, the point of tangency of L_0T and an indifference curve (I_1). From the Exchequer's point of view this is equivalent to a lump-sum tax of Y_1Y_0 (L_1Y_1 being drawn parallel to L_0Y_0 and passing through Q_2). From the point of view of the taxpayer it is equivalent to a lump-sum tax of Y_2Y_0 (when L_2Y_2 is drawn parallel to L_0Y_0 and tangential to

[1] *Loc cit.*

I_1). We can express the excess burden on the taxpayer as Y_2Y_1. This procedure is analagous to that used to show the excess burden of indirect taxation.

Finally, we can consider the effect on the supply of effort when taxation is indirect. We have now two tax curves : α and β of Fig. 2. These are shown on Fig. 4. With the indirect-tax system, equilibrium is given by the tangency of an indifference curve and the β-curve (the tax formula from the point of view of the taxpayer). This is the point Q_2. At this point the pre-tax income is AC, of this BC is the yield to the Exchequer, AQ_2, the

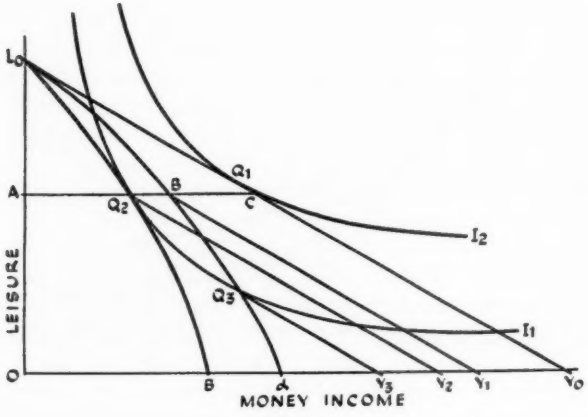

FIG. 4

post-tax income and Q_2B the excess burden on the taxpayer due to the indirect tax. In addition to this there is the excess burden on the taxpayer arising from any tax which varies with income and therefore changes the rate of exchange between leisure and consumption. This is shown in the same way as was done in Fig. 3, by the amount of Y_3Y_2 (where Q_2Y_2 and Q_3Y_3 are both parallel to L_0Y_0 and Q_3 is the point of tangency of Y_3Q_3 and I_1, the indifference curve passing through Q_2).

The presumed advantage of indirect over direct taxation is now seen to be a mistake. It is true that an income tax involves an excess burden on the payer over and above the gain to the Exchequer. But the transfer to indirect taxation is not a way of escaping this burden, but merely of adding to it. Indirect taxation is not more favourable to the supply of effort than a direct tax—since a direct-tax formula is always available which will have the same results, and be less onerous to the payer. It

may be true that a particular shift to indirect taxation, which leaves the formula unchanged from the point of view of the tax receiver, will also increase the supply of effort, but if this happens it will be because the increased burden of the tax on the payer is a more powerful incentive to increased effort and outweighs the probable adverse effect of an increase in the marginal rate of tax. In any case, it is not the change of method which is causing the change in output but the change in the tax formula from the point of view of the taxpayer.

III

The general point is indeed simple: if people work to obtain goods, then their incentive to work is affected in the same way, whether the goods they can obtain from an hour's work is limited by direct or indirect taxation. If a given revenue is required then the resources available to the consumer must be limited to the same extent by either method. But the method of indirect taxation has the further disadvantage of reducing the efficiency with which those resources can be used, and therefore imposes an added burden. The heavily geometrical argument of the previous section is required to formalise these concepts, especially that of the progressiveness of indirect taxation.

The ideal redistribution tax is a tax on earning capacity, if earning capacity be defined in terms which make it impossible for the taxpayer to influence his own earning capacity. Such a tax could be used to obtain any desired degree of equality of incomes and incomes would be defined, as they should be, to include the enjoyment of leisure by an employee or the failure to endure the worry of risk-bearing by an entrepreneur. But until we can find an adequate measure of earning capacity, we must be content to take actual earnings as the basis of redistributive taxation. From the point of view of taxation which takes the distribution of income for granted and seeks the ideal supply of those services for which the state is responsible, the ideal tax is a poll tax, whose amount depends on the preferences of taxpayers for goods and services—including those supplied by the state.[1] But this produces equal difficulties of estimation, so perforce we treat the

[1] This is of course the public utility problem, for the state is the supreme public utility (see *inter alia* "The Pricing of Public Utility Undertakings," *The Manchester School*, September 1947). The ideal amount of tax is not given uniquely (except in trivial cases) by consumer preferences and there is some arbitrariness in distribution, but there is no reason to expect this to give an adequate margin for achieving any particular aims in terms of redistributive justice.

level of income as a measure of the valuation placed on the services obtained from the operation of the state. On either view of taxation policy we are forced to make tax payments depend on income (or on outlay) and to increase as it increases. But this involves the consequence that a taxpayer who by his efforts increases output of a commodity by X must get less than that, since the government is to get some; the supply of his factors will not be ideal. If the tax system is used to ensure an approach to equality, it achieves this end by reducing the importance of money incomes; if larger money incomes become less important, people will be less inclined to strive for them. It makes no difference whether the importance of a larger money income is reduced by direct taxation or by raising the prices of the goods which will be bought out of an increase in money income.

However, the argument of the preceding section is a formal one and tells us nothing about the real world that we have not assumed at the beginning. It is important therefore to be clear as to what we did assume at the beginning. We started with the existence for every individual of a consistent [1] indifference map covering all the available forms of outlay, and we have assumed this map to have the usual properties. Beyond this we have assumed that it is possible to add a further dimension to the indifference map, to represent the quantity of leisure, and that the map will then remain unchanged and consistent.[2] If this is true it becomes possible to draw Fig. 4, where income is compared with leisure. For then any cross-section of the indifference map for a given amount of leisure is identical with any other. Income then means income expendable at pre-tax prices and thus a particular point on the income–expenditure curve of Fig. 1. When indirect taxes are imposed, the consumer is not on a point of the income–expenditure curve, but there is a point (Q_3) on this curve which is just as satisfactory as the point

[1] Consistency can be defined as transitiveness in the relation of preference. Thus if A is preferred to B and B to C then consistency implies that A is preferred to C.

[2] This implies that leisure is an independent good in the sense that for any bundle of goods A, then for all bundles where $A > B$ (the inequality being read as "is preferred to") $(A + L) > (B + L)$ for any amount of leisure L. Independence in this sense will not normally be complete. The argument of the text must be modified to allow for this; subsidies on goods which are strong substitutes for leisure could increase output by making leisure less attractive and thus altering the indifference map of Figs. 3 and 4. Thus subsidies on rapid travel to work and taxes on cricket matches could be justified as helping to offset the distortion of the supply of factors of production.

actually reached. We can treat his post-tax income as being that income which, at pre-tax prices, would bring him to Q_3, since he is indifferent between these alternatives. The consumer's decisions to obtain income by work can be expressed as being his reaction to this equivalent income providing the two sets of decisions, how much to earn and how to spend the income earned, are themselves co-ordinated as a single problem.

But of course this may not be the case. All reasoning based on indifference maps depends on their being consistent at any one time and also not subject to continuous change. But we know that preferences are often highly unstable, and also that consistency is not always achieved. This is the more true in this field because, in any significant sense, the budget must be thought of as being a household budget, and in the households the two sets of decisions are often taken by different people. We cannot therefore feel certain that our indifference maps are consistent and stable for the purpose at hand. All we can say is that, if they are, there can be no possible benefit from switching from direct to indirect taxation so long as the same tax formula is applied. On the other hand, lack of consistency and stability need not necessarily suggest any advantage in the switch. It is, however, likely to do so. For if the worker is not concerned with what his money will buy, the increase of prices resulting from indirect taxation will not affect him, while the reduction of direct taxation will—and will normally create an increase in the supply of effort.

Very few attempts have been made to show the extent to which we can rely on the consistency or stability of consumers' preferences. Budget enquiries show a considerable degree of consistency between families in their decisions as to the main heads of expenditure. But this is of little help here. It is worth recalling that two important reasons have been given in Britain for the increase in absenteeism: the high marginal rates of tax and the fact that there is very little to spend earnings on. The latter is simply an extreme formulation of the statement that the price of basic requirements is very low and of luxuries very high. Thus not only is the income-tax progressive but so also is the indirect-taxation system (at any rate over the range of moderate incomes).[1] The indication is that workers do compare the effort of an extra hour's work with the additional goods it will enable

[1] This excludes the very low and the very high incomes. Beer and tobacco taxes form a very important exception and their effect has been to reduce the progressiveness of the whole tax structure.

them to buy and that, under present circumstances, they find them very inadequate after they have earned enough to pay for rations, rent and certain conventional necessities and luxuries.

My guess would be that, after a very short lag, the change from direct to indirect taxation leaving the tax formula (from the point of view of the taxpayer) unchanged would leave the level of output unchanged.[1] If it does not, it is because they are thinking in terms of some past price-level (no one except a numismatist is concerned with earning money without awareness of some price-level). If wages are equal to marginal product and the price-level considered is equal to marginal costs, then the supply of factors is ideal, and the community is better off, though the individual worker is worse off, than if he did take current prices into account. But it is difficult to believe that, in time, the new price-level will not be taken into account. In any case, it would seem highly unwise to follow a policy which has little else to recommend it, solely because of reliance on an irrational reaction.

It may be noted that wage-earners do not have the opportunity of adjusting their supply of labour in accordance with their preferences except in periods when there is no serious risk of unemployment. At other times they must either supply the normal week's work or none at all. However the choice still remains for the supplies of other factors at all times.

IV

The whole of the foregoing explicitly excluded the question of saving; income and current consumption have been treated as identical. This section is devoted to the problem of whether the conclusion is changed when saving is taken into consideration.

If the transfer from direct to indirect taxes makes saving more attractive, it will also have an effect on the supply of effort. The change from direct to indirect taxation leaving the tax formula (from the point of view of the taxpayer) unchanged leaves the supply of factors unchanged so long as we ignore the possibility of saving. But if saving has become more attractive then the gain from increasing the supply of factors is to that extent augmented, and the supply of factors will rise and approach closer to the ideal supply. Thus, if the indirect-taxation system encourages saving it has an advantage in terms of the ideal supply

[1] I would concur with Mr. J. Tobin's conclusions on the "money illusion" in *The New Economics*, p. 581.

of current factors. In times of depression this would be of less importance than the adverse effect of a high rate of saving on the *use* of current factors; in times of boom the effect of a high rate of saving would be an added commendation. But even if the effects of indirect taxation via the desire to save were found to be desirable they would not prove the case for indirect taxation; there would still remain the disadvantage that indirect taxes impose an excess burden on consumers because of their discriminatory effect. Thus even if the argument of this section were conclusively favourable to indirect taxes this would not decide the issue.

If high rates of taxation are expected to be temporary and prices, net of taxes, are expected to remain constant, then the indirect-tax method provides an incentive to the accumulation of money savings, which can be obtained both through increased effort and reduced consumption. Under the income-tax method, on the other hand, the incentive is to anticipate leisure. If taxes were high in periods of inflation and low in periods of deflation, this would provide an advantage for the indirect-tax method. Under most, but not all, circumstances the expectations of changes in tax rates are not held with the degree of confidence which would be necessary to give the consideration any great importance. It is of course symmetrical and an expected rise in rates would have opposite results.

Where income is variable, the normal forms of progressive income tax give a special incentive for reducing fluctuations in income. The progressive indirect-tax system does not have this defect, but it provides a special incentive for reducing fluctuations in outlay.[1] There is no general reason for preferring one to the other, although for some purposes one or the other may prove convenient. Here indeed the effects of the two systems are not additive but alternative, the one affecting the distribution of effort and the other of consumption through time. In the case of a risky enterprise which will produce its profit (if there turns out to be any profit) over a short period, it will be more discouraged by direct taxation, since consumption of the profits can be spread and thus pay less tax with an indirect-tax system. If the profits would be spread evenly through time, both systems will give the same result.

[1] That is, it penalises extravagant (and therefore highly taxed) expenditure, thus it encourages the maintenance of a constant standard of living rather than a lower normal standard with occasional extravagances. Of course, if the extravagances are preferred despite the discouragement afforded by the tax system, the tax system will have no effect on their distribution through time.

Apart from these special cases the general position is complicated. It will be found that the incentive to save, and hence also the incentive to increase earnings in order to save may be greater under one or other system according to the precise details of any particular situation; no general statement can be made without knowing the shape of the indifference map.

It is convenient to consider the case where the following conditions are realised:

(*a*) income, outlay and tax rates are treated as constant through time;

(*b*) an income tax is replaced by a system of indirect taxes giving the same tax formula from the point of view of the taxpayer;

(*c*) the particular taxpayer considered saves the average amount, for all taxpayers of his income.

It then follows that he is paying the same tax under either method and that the extra income he will obtain in the future as a result of saving current income will attract the same additional tax under either method (providing it is spent in the period in which it accrues). The difference between the two methods arises from the fact that, with indirect taxation, present saving reduces present taxes. If the tax is proportional to income, the tax saved on current expenditure is equal to the extra tax paid on the future income resulting from the saving. If the tax is progressive the tax saved will be less than this; if regressive, more. In all cases the effect is as though the rate of interest on existing assets were unchanged and the rate of return on any additional saving increased. The effect must be to increase saving.[1]

The point is the familiar one that an income tax involves the "double taxation of saving," whereas a system of indirect taxes does not.[2] This discussion throws no light on the justice of such double taxation, but it does suggest that if it is desired to encourage saving there is some advantage in the method of indirect taxation, while if it is desired to discourage saving then the case against indirect taxation is strengthened.[3] However, the limiting con-

[1] If saving increases then the rates of indirect taxation will have to be raised to maintain the yield of taxes. This will reduce the level of saving, but it cannot reduce it to the level associated with the direct tax method; if it did, no rise in tax rates would be needed.

[2] Here as elsewhere, all producers' goods are assumed exempt from indirect taxes—as is the normal practice. If producers' goods were subject to indirect taxes then the two methods would give identical results.

[3] It has been argued that "double taxation of savings" can be eliminated by an adjustment of income tax provisions. However, the administrative problems which this would raise form an overwhelming obstacle.

ditions of the previous paragraph must be removed. This will show that what has been presented as a clear conclusion, is in fact subject to qualification. The alternative to an income tax with a given tax formula is a system of indirect taxes which give the same formula—from the point of view of the Exchequer, not the taxpayer. This implies a formula which places a heavier burden on the taxpayer than the income tax it replaces. Thus the change reduces income and with it saving. It renders saving more attractive in that the sacrifice of the same current goods will give more future goods than before, but at the same time it reduces the quantity of goods which can be enjoyed both now and in the future and this is usually held to reduce saving. The other condition to be relaxed concerns the distribution of income between persons. The use of indirect taxes reduces the tax payable by the people who, in any case, save a large proportion of their income and increases the burden on those who save little. If those who save most have the largest marginal propensity to save, this strengthens the presumption that indirect taxes are more favourable to saving. This need not be the case; those who save most may be those (say, with large insurance policies) who treat a certain minimum of saving as very important, but who, when this minimum is obtained, will not devote much of any further increment of income to saving; those who save little may be those with other large calls on their income (for example, a large family), but who would devote a large proportion of any income available to them, after these calls were met, to saving.[1] The effect of this consideration is very difficult to estimate, but on balance it seems likely to be favourable to an increase of saving.

The result of taking saving into account is thus to produce a certain vagueness. The substitution of indirect for direct taxation may (perhaps is likely to) lead to an increase of saving from a given income. If it does, it increases the incentive to augment that income; current consumption is reduced and the rate at which consumption can be substituted for leisure is unchanged.[2] Thus if the change of methods of taxation increases saving, then the supply of effort will be greater than is suggested by the analysis of the previous section, while if saving falls the reverse will follow.

[1] It may be noted in passing that, by the use of subsidies, family allowances can be introduced into the formula of an indirect tax. If this is done, the cost to the Exchequer is *heavier* than the benefit to the taxpayer.

[2] This requires certain, plausible, assumptions to the effect that present and future goods can be treated as independent.

V

It has been shown that, if we do not take saving into account, the transfer to indirect taxation involves an additional burden on the consumer, so that the traditional objections to indirect taxation remain valid. It has further been shown that the introduction of saving into the picture may modify this result and that irrationality of individual decisions could also do so. Where the result is modified by these two factors the double burden of indirect taxes still exists, but the effect that this burden would otherwise have on the supply of effort is modified, and if the supply of effort is thereby increased the final burden on the community is reduced. However, their effect on the supply of effort is almost certainly not so large as to offset the additional burden on consumers from reliance on indirect taxation.

The question then arises as to why in present conditions in Britain there has been such widespread agreement for this policy of reducing direct taxation and increasing indirect taxation. Three major reasons can be given:

(*a*) In general, if taxation is imposed the reduction in the supply of effort will be greater the higher the marginal rate of tax. But if the marginal rates of tax are to be reduced over a wide range without reducing the yield of the tax, then the tax must be made less progressive. This can be achieved equally well by altering the rates and exemptions for the income tax or by imposing indirect taxes on articles of mass consumption. The former method, although it has all the economic arguments in its favour, is politically very inconvenient, because it makes it quite clear that the poor are having their tax increased in order to reduce the tax on people who are richer than they. The burden of an indirect tax is much more difficult to assess and appreciate. It appears necessary to render the whole tax structure less progressive; politically, this can be rendered more palatable by concealing it in a change in the method of taxation. This is the political reason.

(*b*) Any single method of taxation is liable to evasion; the use of several methods may not reduce the aggregate evasion but it is likely to spread the gains from evasion over more people (can this be called more equitably?). It may happen that an economically dubious tax is less liable to evasion than an economically admirable tax, and this could be a reason for choosing the tax with less loopholes or for preferring a combination of the two. There is no doubt that considerable incomes are being made in ways which escape tax and that they are specially vulnerable to taxes on luxury goods. This is the administrative reason for indirect taxes.

(*c*) It has long been realised that indirect taxes or subsidies are justified if they bring prices closer to marginal costs. The opportunities for such taxes is greatly increased in an economy where prices are determined by regulation and not by the free market; in such an economy prices may bear no relation to ratios of substitution. This normally leads to the imposition of additional controls on consumption, but on occasion the price mechanism may be called in to assist through the imposition of indirect taxes. A striking example is the increase in the tobacco duty in the 1947 budget; the case made for this measure consisted of arguing that the pound was over-valued relative to the dollar, so that prices calculated at the official rate did not represent substitution ratios. This could be corrected by an increase of tax, since rationing would involve great administrative difficulties. This is the economic reason.

This is not the place to consider whether these reasons are adequate to justify the policy of increasing indirect taxes while reducing direct taxes. It is sufficient to make clear that they do not, in any way, contradict the traditional case against indirect taxation, which retains its validity.

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British Economy of the Nineteenth Century. By W. W. Rostow. (Oxford: Clarendon Press, 1948. Pp. 240. 15*s*.)

These essays are described by the author as "a collection of exercises in method." The period from 1790 to 1914 supplies a certain continuity of data regarding British conditions, and has sufficient unity to provide "a laboratory for the theorist to test his hypotheses" (p. 2).

Outlays other than for consumption have to be distinguished "with respect to their being productive or non-productive," and the first two essays set out to show that "the main trends in the British economy over the period 1790–1914 are best understood in terms of the shifting balance between productive and unproductive outlays; and, among types of productive outlays, with differing yields and differing periods of gestation" (p. 12).

The "trends" are price movements; a diversion of productive power from consumption to capital outlay or war should raise prices, but if the capital outlay is *productive*, a fall of prices should follow after "a period of gestation."

Professor Rostow pursues this theme with an interesting selection of statistics, and throws light on many aspects of his subject. But, to link up a recorded fall of prices with a preceding productive capital outlay, would have required far more complete data of periods of gestation than could possibly be made available. The verification is inevitably inconclusive.

That war expenditure raises prices hardly needs verification, but that capital outlay, when met out of savings, or, in other words, out of income, does so is not so clear. Professor Rostow attributes little influence to money (pp. 21–2). Of the possibility that an expansion of capital outlay may be the effect and not the cause of the increased savings attendant upon a rise of prices he takes no account at all.

When he turns from the longer trends to the cyclical, he recognises the limit set to expansion by the supply of money, but he regards the limit as "more elastic" than that set by the factors of production. Is there not a confusion here? The factors limit the expansion of *production*; money limits the expansion of the *flow of money*. The expansion of the flow of money can continue after the expansion of production has met its limit in full employment; the rise of prices could continue indefinitely if it were not limited by the gold reserve position.

The phase of "easy money conditions," which normally

marked "the early stages of revival" (p. 55), made way for "a gradual tightening in the market" (p. 56), only because the gold reserve position required a contraction of the flow of money. Professor Rostow is seeking to explain price trends by non-monetary causes. But a rise or fall of the price-level due to non-monetary causes does not produce fluctuations in general activity, unless it becomes linked up with a change in the flow of money.

Four of the essays in the book are concerned with the years 1873–96. He contests the view that it was a period of high unemployment. The average percentage for the years 1874–1900 was 4·9, being very little above that of 4·69 for 1850–1914. Had he excluded the years 1897–1900 of very good employment, the average would have been 5·3%. But in any case it was not the average unemployment for the whole period of falling prices from 1874 to 1896 that made so deep an impression; it was the exceptionally severe unemployment of 1879, 1885 and 1886 (to which Professor Rostow indeed makes emphatic reference—pp. 97 and 181). And the falling prices, even during the years of good employment up to 1876, meant narrowed margins of profit.

The cycle following the years of activity, 1889–91, was totally different in type from that following 1873. The climax of depression was quickly reached, and revival set in in 1894.

One essay, specifically devoted to the years 1874–79, lays stress on "the shift in the character of investment," external investment having rapidly fallen off while internal investment remained comparatively active. That would account for the continuance of relatively active conditions in Great Britain in spite of unfavourable world conditions. But was it not due primarily to a shrinkage of total savings, which left no surplus for investment abroad? In this essay prominence is given to the gold position and its effects on bank rate, but there is no recognition of the influence of bank rate on the state of activity.

Two of Professor Rostow's essays are devoted to the relation between economic conditions and politics—particularly the influence of the transitory conditions arising either from the vagaries of harvests or from the phases of the trade cycle on the demand for legislative measures, not only economic measures relating to tariffs or factory legislation, but political measures such as electoral reform.

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The Phantom of Plenty. By G. O'Brien. (Dublin: Clonmore and Reynolds, 1948. Pp. 75. 4*s.* 6*d.*)

The argument of this book is, that the economic progress of the period which ended about 1914 was exceptional, and unduly costly in the use of resources, and cannot be extrapolated into even a near future. Historical increasing returns have depended on invention and the discovery of sources of supply; but, though the multiplier of human effort has reached sensational figures through mechanical aid, the skill with which supplies are processed does not solve the problem of supply. Invention mainly serves the materials of industrial equipment in manufacture and transport; but we do not live on these, though we live by their help, and knowing better how to handle supplies is not the same as having more supply. Discovery of new sources has now a small elasticity; and the area of the earth's surface that is suitable for essential cultivation is small. (For food crops it is about 7%.) Hence it is not the wars which have created scarcity; they have rather been a test of the reserve-producing capacity of the world. The author uses many indices to show that the world is poor, and that backward countries have carried the cost of the higher standard of a few. The dilemma of Malthus has to be applied to our own time; it has always to be re-dated as an exercise in the true, and not the historical, relation of the laws of returns. This argument is sustained by a most valuable collection and arrangement of data, and reference to the course of opinion. The author sets the further question, whether the betterment of distribution, to alleviate the worst scarcities, is not also subject to limiting factors, and whether unequal distribution may not have been, in a large degree, worth while. As between rich and poor classes in the same country this argument on incentive and invention, and the force of the example of higher standards, has perhaps more force than when it is applied as between rich and poor nations; it is much less true in the latter case that "some of the fruits of conspicuous consumption are shared by the spectators."

This book, like the recent Reports of the F.A.O. and the work of Boyd Orr, disposes of the cliché that this century has a problem of "poverty in the midst of plenty," though there is poverty by the side of plenty. Time and again, ever since 1800, it has been pretended that the problem of production was solved enough, and that distribution was the real problem. Neither of these was true without reference to population policy which, a century after Mill, comes to the front again.

Two further reflections arise. First, we should not regard

the nineteenth century, because of the pace of economic advance and the alleged exhaustion of resources thereby threatened, as a sort of " Great Divide " in economic history, which must settle down to a steadier rate of advance. If we re-date the problem of Malthus from now, we have to recall what he could not foresee. Second, if, as statisticians agree in stating, the average Englishman was four times as well off in 1914 as in 1815; and if the " poverty figures " of about 1900, and those of Orr and the F.A.O. for the present time, are anything like correct, there must have been some neglected aspect of the standard of life at the earlier date which made it possible to rear the rapidly growing population.

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The Elements of Economics. An Introduction to the Theory of Price and Employment. By LORIE TARSHIS. (Boston: Houghton Mifflin Co., 1947. Pp. 699. $4.50.)

A Social Approach to Economics. By HAROLD A. LOGAN and MARK K. INMAN. (Toronto: University of Toronto Press, 1946. Pp. 659. $4.25.)

PROFESSOR TARSHIS has written an unusual economic textbook—remarkable both for what it contains and for what it omits.

Part I, *The Structure of the Economy*, gives a very brief survey of the significance of national income statistics, the nature of the business firm and the rôle of government in economic affairs.

Part II, *The Operations of the Business Firm: Price and Output*, contains a lengthy and comprehensive analysis of the factors governing output and price, for the most part from the standpoint of the individual firm. The treatment is both diagrammatic and tabular, in terms of the equating of marginal cost and marginal revenue, and gives a very clear account of what is commonly called the economics of imperfect competition, though selling costs are not much brought into the picture. As a whole this is excellently done, but it may be suggested that it is liable to be confusing to the student when a marginal cost curve is drawn starting from approximately the same point near the *OX* axis as the average total cost curve.

Part III, *Money and the Interest Rate*, is very slight indeed—two short chapters on banking, and a couple of pages on interest, entirely in terms of liquidity preference in relation to the supply of money.

Part IV, *The National Income and Employment*, the longest single section of the whole book, is concerned with the determinants of employment and output as a whole. The analysis runs on strict Keynesian lines, and is to be recommended as an extremely good summary and exposition of the main argument of *The General Theory of Employment, Interest and Money*. It is perhaps the best account of the Keynesian doctrine that has yet appeared.

Part V, *International Trade, Output and Income*, is equally successful, though on a smaller scale, in explaining the causes of international trade and extending the ideas of Part IV to the case of countries engaging in foreign trade, with special reference to the United States.

Part VI, *Interest Groups in the Economy*, rounds off the book, not too satisfactorily, with three short chapters of a decidedly scrappy nature on Labour, Agriculture and Monopoly.

Professor Tarshis' work has very considerable virtues. It is freshly and interestingly written and presents one view with a high degree of conviction and consistency. On the other hand, it omits almost entirely what is generally regarded as coming within the scope of the theory of distribution; and in the pricing section it is concerned essentially with the firm and only very secondarily with the industry. It would, in fact, be more accurately described by some such title as "Some Element of Economics—An Introduction to the Economics of Imperfect Competition, and to Keynesian Thought."

When, however, Professor Edgar S. Furness says in his Introduction that "A mastery of the book will give the student as thorough a grasp of economic theory and the fundamentals of economic institutions as could be desired by advocates of the traditional method," there is a caveat to be entered. What the student actually receives is an admirable exposition of "The New Economics"—all very much *ex cathedra*; but surely it is desirable that his attention should be drawn to the fact that not a little of what he will read here is really highly controversial. Since the publication of *The General Theory* a great deal of work has been (much of which it is true has been twisted by prejudice or invalidated through lack of understanding) in the way of investigation into its main concepts, and it is becoming clear that not all of it will stand without substantial modification. It remains, of course, one of the important milestones in the history of the development of economic thought; but there is some danger lest the student should be left with the impression

that the final answers have now been found for the problems of how to secure and maintain both a condition of full employment and the optimum functioning through time of the economic system as a whole: problems which, in fact, form the main theme of Professor Tarshis' book. Subject to the foregoing caveat it can be highly recommended—especially Parts II, IV and V.

The second book under review is a really elementary economic textbook on generally conventional lines, which by November 1946 had been reprinted six times (apparently without change) since it was first published in 1939. It is written primarily for Canadian University students, and since it runs to some 650 large pages, this continuous demand would seem to indicate that there is a better market for an elementary textbook of this size and kind in Canada than would probably be the case in this country where the consumptive capacity of first-year students is generally rated rather lower. The illustrations of the working of economic forces are mainly drawn from Canadian sources, because "interest centres naturally on the home problems and the functioning of the social organisation of the home country."

The strength of the book lies mainly on its descriptive side. On the theoretical side there are too many dogmatic or loose statements for it to be satisfactory. The first-year student who has learned, for example, that "under conditions of pure, and at the same time perfect competition, all firms must be of optimum size and operate at optimum capacity"; that "under monopoly or imperfect competition to the degree that average revenue of the firm is above marginal revenue and hence above marginal cost, there will be profit"; and that "over a period of years the price must cover both overhead and variable costs of production. This is known as the *normal price*"; will find that he has a good deal to unlearn in his later years.

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Le Mécanisme des Prix (2me Edition, revue et augmentée). By JEAN MARCHAL. (Paris: Librairie de Medicis, 1948. Pp. 460. 510 fr.)

THE author, who is professor at the University of Nancy and lecturing at the moment in the University of Paris, published in 1946 a treatise on the theory of price and the structure

of the economic system. This book, which has been very well received on the Continent, has now been rewritten and enlarged. As in the case of the first edition, the new book is divided into two parts: Part I, now fundamentally remodelled, is called "Price mechanism and the cyclical evolution"; Part II, "Price mechanism and the economic structure." In practice, the titles do not exactly cover the content: more appropriate titles would be something like "The theory of competitive price and expectations of different span" and "The theory of imperfect competition," respectively.

Professor Marchal starts his analysis with an interesting discussion of the generalisations of classical price theory and cites Hicks's opinion on perfect competition in relation to statics and dynamics, that the totally free market is better suited to a dynamic than to a static approach.

Investigating "fluidity" and "atomism" of demand and supply, the author soon arrives at his restatement of price theory from the point of view of the time element. Instead of Marshall's general short and long aspects, four definite periods are suggested: first, the *infra-short* period: social structure, technology, volume of production and foreign balance of payments have not time to change within this period; second, the *short* period: the structural elements are constant, but producers have time to increase the stock of supplementary goods but not of capital goods; third, in the *long* period producers may increase their plant capacities and new enterprises may be founded; fourth, the *ultra-long* period is characterised by changes of the social and technical structure.

Building on this foundation the author throws much light on the shift of demand and supply curves through time, but has to reserve much space for an exposition of stable price and cost functions—where his four different periods seem to be irrelevant. "Dynamic price equilibrium" is treated from a cyclical point of view—demand and supply situations in different phases of the cycle being the object of the theory. This implies that the method of equilibrium economics—the shift and elasticities of demand and supply curves—are allocated to a few standardised cyclical patterns. Finally, Professor Marchal introduces the theory of expectations and of periods of registration. Here one may ask if the author accepts the assumption that the planning of all the acting parties—firms, state, individuals—are simultaneous in the registration points and if individual plans can be integrated to national plans. These assumptions constitute per-

haps the weakest parts in this domain of neo-classic "modern economics," and it is astonishing that Professor Marchal does not challenge the premises. It would have been better if the author had maintained his original set-up throughout the analysis and thus discussed the whole problem of competitive price and expectation from the angle of the infra-short, short, long and ultra-long periods. This remark does not, however, imply that the first part of the book is not an interesting and thought-provoking exposition.

In the second part Professor Marchal gives a clear-cut and very readable synthesis of the typical monopolistic market situations. Bilateral monopoly is analysed along the lines drawn up by Edgeworth; the complicated duopoly and olygopoly calculations principally follow von Stackelberg. Mathematical, graphical and verbal analysis are efficiently combined, and the author's attempt to cover the whole area with a concise, logical method is of great didactical value.

Professor Marchal closes the book with some observations on the relation between theory and reality, stressing the necessity of a reiterated reconstruction of the theoretical models so as to fit the changing institutional structure. The relation between deduction and induction, that is between price and cost theory on the one hand and statistical demand and cost curves on the other, seems not to interest Marchal in the same degree. But he agrees with Joan Robinson that we know almost nothing about the changing time function of demand.

It is indeed strange that in the mass of price and cost theory produced in the last two decades not a single work—as far as I am aware—has attempted to give a systematic theory of price and cost calculations founded on empirical examples from our own time. There are, to be sure, many descriptions of monopolistic policies, as well as a great number of purely conceptual-logistic works on price and cost from the point of view of economics, or economics of enterprise (often confounded with one another in so-called "modern economics"). But there are no deductions on empirical foundations within a broad frame. This empty space should be explored before long.

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Precision and Design in Accountancy. By F. SEWELL BRAY. (London: Gee and Co., 1947. Pp. 145. 15*s.*)

MR. SEWELL BRAY is one of those useful people who have both a professional knowledge of accountancy and a real familiarity with what economists have written and are thinking; with this double qualification he seeks to interpret economics to accountants and accountancy to economists. The present volume reprints a number of his writings in this field. One must regret that it is no more than a reprint of articles and of correspondence. Most of the articles fall short of the substance which one expects from an article in an economic journal, being no more than newspaper "leaders"—"leaders," admittedly, for technical newspapers. Space is rarely given for any idea to be fully developed. If Mr. Bray had redigested the material which he has put into this book, and given it to us in a more systematic form, he would have saved a lot of repetition; and I think he would have done a more valuable service to the cause of understanding between accountants and economists.

As it is, the only parts of the book which one can recommend to the attention of the economist reader are the compilation of "Legal Decisions concerning the Measurement of Profit" (pp. 60–75) on the one hand, and on the other the correspondence with Dr. Singer (pp. 116–130), which serves a useful function in clearing up some of the illusions to which economists have been subject concerning the functions which accountants can be expected to perform. But there is one thing of great importance which is being said in the rest of the book. It comes and goes, and gets mixed up with other topics, but it really is the main thing which Mr. Bray has to say. It would be unfair to him to review his book without taking the opportunity to emphasise this central teaching of his as strongly as one can.

It is the function of accountancy, on the lowest level, to make a record of business transactions; and on a higher level, to devise means of distilling from that record summaries (balance-sheets and accounts) which enable the meaning of the record to be grasped, as well as it can be grasped. The summaries are summaries of the record; thus it is desirable that they should be constructed from the record by means of accepted rules, and should refrain from introducing from outside elements which have no place in the record from which the summaries are constructed. When the business man, or the investor, or the Government, or the student of economics, uses the summaries, he should know the way they have been constructed, and from

this knowledge he should judge their significance. But since it is impossible to find any set of rules, applicable to the records, which will produce summaries which are equally meaningful on all occasions, it is inevitable that the person using the summaries will have to exercise his judgement in interpreting them. At this stage, too, the accountant will have a function to perform. He can often be of the greatest use in interpreting his summaries; this is, indeed, what may be regarded as the higher part of his function. But it is not desirable that it should get mixed up with the lower part. The interpretation of accounts depends upon the use to which it is intended that they should be put; the raw material, the accounts which are to be interpreted, needs to be made as objective as possible. This demand is so exactly parallel to the demand which statisticians have had to make of their investigators (for instance in social enquiries) that its sense is readily acceptable, once we see it; but the consequences of its enforcement in this particular field are very much worthy of note.

The justification for the use of "historical cost"—for the valuation of an asset at the original purchase price, however remote in time that original purchase may have been—is simply that the original purchase price is the one objective valuation of the asset which finds a place in the basic records. Any other valuation must be a matter of judgement, and therefore belongs to the stage of interpretation, not to the stage of the compilation of the basic summaries. It is, of course, not denied that there will be times (the present being one of them) when valuation on the basis of historical cost leads to systematic bias. But the place where that bias ought to be corrected is in the use which is made of the accounts—by business men, in determining replacement policy, by governments, in determining taxation policy, by economists, in estimating Real Investment—not in the basic accounts themselves. For (especially when one remembers the essential uniqueness of many assets) there is no way of securing that the bias in the basic accounts shall be corrected uniformly. A much greater uniformity can be secured if the bias is corrected at the stage of interpretation.

It is clear that this principle is two-edged. It reproves those economists who have demanded from the basic accounts information which those accounts cannot properly give. And it also reproves those accounting practices (such as the practice of valuing stocks at cost or market price, *whichever is the lower*) which edge a little interpretation into the work of summaris-

ing, and therefore diminish the objectivity of the basic tables. But this last consideration leads one on to another point, which Mr. Bray does not make, though it seems worth making. Economic statisticians are becoming aware that there is hardly any situation which can be adequately depicted by a mere table of figures; every statistical table needs to be annotated, and in a similar way the full meaning of an accounting statement can only be expected to emerge in its accompanying report. But the accountant's report goes to the directors, while his figures go to the shareholders; he has thus some public obligation to pack into his figures the maximum of information, even if he can only do this, within the limits prescribed, by some sacrifice of objectivity. How ought this difficulty to be got over? Should it be laid down that companies must publish an audited report as well as audited accounts? Or would this make the accountant, more than ever, master of the destinies of us all?

J. R. HICKS

Oxford.

Economics for Everyman. By ARTHUR COE. (London: Chapman & Hall, 1948. Pp. xii + 275. 15*s.*)

THIS not very readable book is concerned with the reconciliation of economic security and personal freedom without recourse to a planned socialist state. It is an attempt to construct an economic system on the ideas of John Ruskin. The eternal laws which regulate the world ensure that a man's labour, if well applied, will always provide him with everything he needs in his lifetime and a nation's labour, if well applied, will ensure a similar result for the whole population. The misapplication of labour or the spread of indolence result in misery and want in exact proportion to the indolence or improvidence. The evils to be eradicated from society are those which proceed from this indolence and improvidence in the application of labour.

Such is the initial approach. The application of labour is governed by its division, but the central idea of the book is that the misapplication of labour is due to a lack of balance between currency and goods produced. An honest currency system must ensure that claims to goods are cancelled as they are satisfied and that an amount of money is maintained in circulation which will always balance the goods to be distributed and exchanged. In Eric Gill's phrase, if a loaf of bread is worth fourpence there should be as many fourpences in the country as there are loaves and similarly for all newly made goods. This leads to a distinction

between a primary currency circulation which distributes the claims to new goods amongst those who have produced them and a secondary circulation which distributes these claims among the whole community in exchange for goods already distributed or for services. The mechanics of the scheme requires that all businesses be registered and required to trade under the three conditions that all payments received be paid into a banking account, that all raw materials and partly finished goods be paid for by non-negotiable cheques and not by cash and that all drawings for wages, salaries, rent and taxes be effected by currency demand cheques.

There remain the problems of saving and spare money. Saving spare money creates a disequilibrium unless the money saved is put back into circulation by investment or other means. The present banking system, we are told, keeps about 90% of currency in continuous use and the balance of 10% not in use is the measure of the unemployment caused by keeping money off the markets. Presumably there can be no full employment so long as banks keep reserves.

The development of the argument is not particularly lucid, and the impression is left that there is no effective check against inflationary tendencies. Prices are said to be determined primarily by costs, but rising costs could still be consistent with the preservation of the goods–currency balance. Even the principle of basic prices for each commodity tied to a minimum output with minimum wages, salaries and rates of capital remuneration, as developed in Chapter IX, leaves a good many difficulties unresolved in the convenient escape-clause that "the methods used in the fixing of basic prices must be appropriate to each specific branch of industry."

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America's Needs and Resources. By J. FREDERIC DEWHURST and Associates. (New York: The Twentieth Century Fund, 1947. Pp. 812. $5.00.)

IN this volume the Twentieth Century Fund publishes the results of an ambitious survey conducted under its direction. A central staff under Dr. Dewhurst as Research Director was assisted by a large number of research associates and contributors in many walks of life, in industry, government, research and teaching. Each chapter in the report is labelled with the names of the individuals mainly concerned with its preparation, an admirable practice in a composite work of this kind.

Part of the object of the survey is to review the past trends and present position of the U.S. economy. The field covered is vast—the population and labour force; patterns of consumer spending and saving, of government and capital expenditure; agriculture, food and nutrition; housing, slum clearance and urban development; regional programmes for power and conservation on T.V.A. lines; and countless other topics, great and small. The material set out and analysed is of great value to all interested in the U.S. scene.

A good deal of time and labour has clearly been spent on the assembly of data. Even so, there are several places where corrections and amplifications are needed. One example can be given here. The U.S. Bureau of the Census conducts a monthly sample survey to obtain estimates of the labour force. In July 1945 the Bureau introduced a new definition of the labour force and an improved technique for obtaining estimates, the effect being to raise the estimate (for April 1945) by $2\frac{1}{4}$ millions. The book under review shows the old figures up to June 1945 and the higher revised figures thereafter, with no indication of the break in continuity (Figure 24 in the text and Appendix I). This violates one of the fundamental rules of statistical presentation.

The other, and perhaps the more important, object of the survey is to project the material forward, to put down a consistent set of estimates for 1950 and 1960. This game of model-building for the future is one that anyone can play and many have done so. The results are surprisingly different, and who dare say which is to be taken as a guide? I would, however, criticise the present model on two scores: I regard the general approach and technique used as very one-sided and incomplete and I would, as a matter of personal judgement, question the orders of magnitude assumed.

The estimates for 1950–60 are so spread throughout the text that it is difficult to see exactly what assumptions are made and what the end result looks like as a whole. The basis is a simple projection of the labour force and national income. Indeed, the projection is surprisingly crude for an elaborate survey of this kind. For 1950, for example, the total labour force is put at 60 millions (cf. $54\frac{1}{2}$ millions in 1940, both figures being on the old basis of the Bureau of the Census) and, on certain assumptions as to overall unemployment, hours of work and productivity, this force can produce a national income of \$106 billions at 1940 prices (cf. $\$77\frac{1}{2}$ billions in 1940). The assumed labour force is somewhat lower, and the resulting national income

considerably lower, than given by such other forecasters as Hagen, Mosak and the National Planning Association. In particular, they are lower than the projections made quite recently by the Bureau of Labor Statistics ("Full Employment Patterns, 1950," *Monthly Labor Review*, Feb. and March, 1947). I regard the present estimates as unnecessarily conservative.

On this basis, the survey proceeds to split national income in 1950–60 into the various detailed expenditures of consumers, of Government and on capital account. Apart from modifications here and there, this is done from historical relationships between expenditure and national income. And here, in effect, the analysis stops. There is little or no attempt to complete the picture by translating final demands into physical production by industries and hence back to the labour force required, to be checked against the labour force assumed at the outset. Indeed, it is stated quite definitely that "industrial production estimates . . . are not vital to the scheme of this survey" (p. 737). But, without these, the most important questions are not even raised. It is one thing to set down what would be demanded, for example, of the steel-consuming industries if national income is such and such, quite another to see under what conditions the steel would be forthcoming. Others have stressed that the main problems of 1950–60 may be the difficulty of maintaining full employment if historical relations persist, that there may be a gap between what can be produced and what would be bought out of the income generated, and that the U.S. must look to increases either in consumer expenditure or in investment or both. The results of the present survey, so elaborate in detail, are not to be compared with the less ambitious but more penetrating analysis of the Bureau of Labor Statistics.

R. G. D. ALLEN

London School of Economics.

The Labor Force in the United States, 1890–1960. By JOHN D. DURAND. (New York: Social Science Research Council, 1948. Pp. xviii + 284. $2·50.)

THIS book is the outcome of a request from the Social Science Research Council's Committee on Labour Market Research, for a study of the influence of population factors upon labour-market problems. Mr. Durand's main objective is to measure the effect of demographic factors upon the number of people in the labour force. For each of the main demographic groups—men and women, coloured and white, native-born and immigrant, all sub-

divided into five-year age-groups—he has made a careful statistical study of the number in the labour force and the ratio of that number to the total population of the group. He has computed this " labour-force proportion " for all these groups (in more or less detail) for the whole period 1890–1945. On the basis of these historical data, he has made a projection of the future United States labour force by applying the past " labour-force proportions " for each demographic group to population forecasts for each group, assuming medium fertility.

The past statistics show that the proportion of older male workers in the labour force has tended to decline in the U.S.—this is ascribed to a combination of decreasing eagerness to work with reduced scope for elderly workers owing to technological changes and the fall in the number of self-employed. A warning to labour economists on the unreliability of the category " unemployable " is contained in the author's conclusion that during the War a considerable contribution to the labour force came from mental hospitals and State prisons. But the most important variable elements in the labour force are of course the women workers and the young workers. It is shown that one of the strongest factors increasing the proportion of women in paid jobs in the United States has been off-farm migration—the labour-force proportion being much higher in towns. Marked differences in the employment habits of coloured and white women are brought out. As regards the projected future labour force, two features may be mentioned: the proportion of young workers declines—a factor that will tend to reduce the flexibility of the labour force—and the rate of growth in the male labour force falls. For a time this will be compensated by greater female recruitments; but the author concludes that the total United States labour force will start to decline before the end of the century.

The historical material shows clearly that demographic factors have played an important rôle in determining the labour-force proportion of certain groups of the population in the U.S.A.—for instance, between 1925 and 1930 the group " native white women aged 25–29 " showed a decline of 5% in the labour-force proportion, and 4·1% of this is due to an increase in the ratio of married to unmarried women. However, for the labour force as a whole the salient fact that emerges is that (apart from the long-term influence of birth- and death-rates) demographic factors have a relatively small influence upon the labour-force proportion. Thus the change in the labour-force proportion for males during the period 1920–40 was −4·6%, of which 1·4% was accounted for by

demographic changes. The change for females for the same period was +3·0%. Even if we follow the author in classifying the proportion of persons living on farms as a " demographic factor," the greater part of this change is still due to non-demographic factors. The chapter on War-Time Expansion and Post-War Contraction of the Labour Force shows, of course, more markedly than the analysis of the earlier period the predominating importance of factors other than demographic in determining the labour force—7¾ million more people joined the labour force than would have been projected on " demographic " grounds, most of them for reasons quite other than " demographic."

The study might have gained in clarity if it had been more consciously confined to the establishment of tables for the " labour-force proportion " in the various demographic groups, and the computation of the theoretical changes in the total labour force resulting from the application of these tables to the forecast populations in each group. This would have furnished economists with a clear-cut measure of the influence of demographic factors upon the labour force, without involving the author in the whole problem of the volume of employment and unemployment. That is rather a complicated problem, and it is not surprising that in boarding it the author has fallen into some traps —such as confusing the supply of labour with the demand for labour (p. 109). Economists have rightly tended to pursue the question of employment along two lines : first, the economic relationships determining the volume of employment at any given time, with a population that changes so slowly that it can usually be regarded as constant; second, the longer-term relationships —for instance, the effect of income on birth-rates—which determine the size and composition of the population. It is in this latter field that Mr. Durand's contribution lies. Students concerned with long-range labour problems will find valuable material in the exceedingly thorough and painstaking compilations given in the appendices of the book.

HELEN MAKOWER

Geneva.

Les Problèmes Théoriques et Pratiques de la Planification. By CH. BETTELHEIM. (Paris : Presses Universitaires de France, 1946. Pp. 336. 330 fr.)

THIS book was written just after the war, when planning and " mixed economies " were topics of the hour, as a hurried product of teaching and discussion at l'École Nationale d'Organisation

Economique et Sociale in Paris. It was thus designed as a general introduction rather than as a specialist study for the advanced student. Much of it is accordingly occupied with exploring what the economist will regard as well-trodden ground. Yet there is sufficient that is fresh and stimulating in Professor Bettelheim's treatment to give it a serious claim upon the attention of the sophisticated reader and to make it an important contribution to the discussion of the problems of a socialist economy. The exposition, while tending in a few places to be prolix, is generally vigorous and lucid.

The author has the advantage of a close knowledge of Soviet planning, about which he wrote a comprehensive and well-informed pre-war study (*La Planification Soviétique*). The fact that he can draw upon problems and experience from this field gives the present work a special interest; and the first part of the book (entitled " La Pratique de la Planification ") opens with a fairly full description of the structure and methods of Soviet planning. A distinction is made between so-called " integral planning " (which presupposes " the socialisation of an important fraction of the means of production ") and " partial planning " and indirect planning through price-controls and investment control. The theoretical part of the book is primarily concerned with " planning in the full sense of the word," resting upon " collective property in the means of production "; but some attention is paid to what, by contrast, are distinguished as *interventionnisme*, *dirigisme* and *planification souple*. The author rejects the quasi-competitive solutions of the problem of economic calculation advanced by writers such as Dickinson, Lange and Lerner, on the ground that these would substitute mechanisms of economic adjustment *a posteriori* for the adjustment *a priori* which he regards as the essence of economic planning. Instead, it is argued that an adjustment of production to consumers' needs so as to maximise satisfaction could be achieved by the use of the following principle.

Professor Bettelheim starts from the assumption that retail prices will be ordinary market prices, influenced by the state of consumers' demand. The criterion as to whether production and investment in an industry should be expanded or contracted would be the relation of the current retail price (after proper allowance for expenses of distribution) to a standard normal price which he calls the " price of production." As a basis for calculating this " price of production " the author points out that, in a progressive economy where net investment is occurring,

the profits accruing to the State economic organs (= the difference between total sales of consumers' goods valued at current retail prices and wage- and salary-costs incurred directly or indirectly in their production) will be a function of the rate of net investment. Total profit, in other words, will represent the surplus product of society. Given the rate of investment and a valuation of capital equipment (for example, in terms of replacement cost), a general rate of profit could be calculated, and the "price of production" appropriate to each industry arrived at by adding an amount sufficient to yield this rate of profit to the prime cost of output (including amortisation and managerial expenses). Such a rate of profit would also serve as a criterion of the capital-intensity of investment projects.

This is described by the author as "a notion essentially dynamic." With it he contrasts a kind of Walrasian equilibrium, in which, since there is no net investment, there would be no surplus product and industry on the average would make no profit. But only in a static equilibrium so defined as to include the attainment of "capital saturation" in some sense (although this is not explicitly stated), as well as the absence of net investment, would "price of production" in each industry coincide with what the author (following Cantillon) calls "intrinsic value" (= prime cost, ultimately reducible to cost in wages, and hence dependent on the quantity of labour-time involved in production). Nevertheless he attaches considerable importance to the latter as the only true measure of real cost in a long-period sense.

This exposition is worked into an analysis of static and dynamic equilibrium-conditions in terms of Marx's well-known "schema of reproduction." Besides this central theme, the book touches on a number of more special questions: on the "balance method" (resting on various technical coefficients of production) employed in Soviet planning, on the rôle of money, on rent and on foreign trade.

MAURICE DOBB

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The Worker and the State. By SIR FRANK TILLYARD. (London: George Routledge & Sons, 1948. Pp. xii + 302. 16*s.*)

IN the first edition of this work, published in 1923, the author described its scope as dealing, broadly speaking, with the interference by the State in the relationship of employer and employed for the purpose of securing the health, safety and general well-

being of the latter class. Within that definition he included factory legislation and the law as to fixing and payment of wages, as to hours of labour and as to compensation for accidents, but purposely omitted the more specialised subjects of social insurance and trade-union law. The second edition, appearing in 1936, widened its scope to include the two latter subjects. The interval which has elapsed since that time has seen a complete revision of the law relating to factories, social insurance and industrial-accident compensation, and a wide extension of the statutory regulation of wages, thus necessitating a new edition of the book.

An understanding of the principles on which such legislation is based demands historical treatment, and in this respect the book will serve the reader well, although there are certain parts where, in the process of revision of earlier editions, the details of legislation now repealed might have been omitted and so have left more space for summarising the legislation which has replaced it.

Of particular interest, in view of the author's practical experience in its administration, is the treatment of the subject of the statutory regulation of wages under the old Trade Boards (now converted into Wages Councils) and other similarly constituted bodies. To the student of this subject, possibly the most puzzling factor will be the almost complete absence of guidance given in the various Acts which since 1909 have established wage-fixing Boards as to the standard of wages to be aimed at. The only case of such guidance to which the author draws attention was contained in the Agricultural Wages (Regulation) Act, 1924, but with the supersession of the county Agricultural Wages Committees even this instance has disappeared. The author discusses also the extent to which wage-fixing Boards are subject to ministerial control and guidance and concludes that, although there are considerable ministerial powers in relation to questions of administration, there is in law and practice little or no control over their wage-fixing functions. The request addressed by the Minister of Labour in April 1948 to Wages Councils to have regard, in considering wages proposals, to the Government's White Paper of February 1948 on Personal Incomes, Costs and Prices no doubt came too late for consideration in this book. In seeking to define the attitude of employers as a whole towards minimum-wage legislation it is curious to find the author stating that this matter has received a clear and definite answer in the course of a debate in the House of Com-

mons, whereas the statement to which he refers as supplying that answer was made on behalf of the Tory Reform Committee. If the author has evidence of the right of that or any other committee of the Conservative Party to speak on behalf of employers as a whole or even of any organised body of employers, it would have been helpful if he had produced it.

In dealing with legislation affecting the payment of wages, the author points out that some of the provisions of the Truck Acts suggest a primitive organisation of industry which has largely, if not completely, disappeared. The Acts in question are complicated and obscure, and one might well ask whether much of such legislation, necessary as it may have been at the time of its enactment, has not now served its purpose and whether the more effective modern safeguards against exploitation are not the higher standard of education, the higher level of public conscience and the higher degree of trade-union organisation which now obtain.

An account of the statutory provisions as to safety precautions in industry is, of course, not the place for dealing in detail with voluntary safety methods, but the author rightly draws attention to the limitations on what can be done by legislation in this field, to the progress which has been made in voluntary methods and to the educative work among employers and workers still to be carried out. To carry the author's suggestions further, this would seem a fruitful subject for collaboration between employers and workers centrally in each industry as it already is locally in many works. The establishment of Development Councils may provide the means for this being done in industries where such central collaboration does not already exist.

H. S. KIRKALDY

Queens' College,
Cambridge.

Bevölkerung, Arbeitspotential und Beschäftigung im britisch–amerikanischen Besatzungsgebiet (Population, Labour Resources and Employment in the British–American Zone of Occupation). By HILDE WANDER. (Kiel: Institut für Weltwirtschaft, 1948. Pp. 90.)

THIS little book portrays the population and occupation structure of the British and American zones of occupation, after the upheaval created by the war and population movements in the aftermath of the war. Finally, the author tries to present

an employment and unemployment estimate in the light of probable population movements. Her conclusions are deeply disturbing. Assuming no emigration outlets, implementation of Level of Industry plan, continuation of industrial dismantling and no foreign credits, she arrives at an estimate of about 7 million unemployed (almost 30%) in 1961. While one is inclined to consider some of her assumptions pessimistic in the light of recent developments, it should be remembered that selective emigration of the most skilled and most useful elements in the age structure may well make matters even worse than she assumes. Not unnaturally, the author concludes with a plea for a revision of the Level of Industry plan and an end to industrial dismantling. The outlook for Bizonia on her figures is certainly unpromising. However, any economist who dares forecast the level of demand for labour for any particular area for 1961 is sticking his or her neck out a very considerable distance.

For this reason, more interest attaches to the picture of present population and occupational distribution. The figures and tables presented in this picture bring out some very interesting facts. The total population of Bizonia has increased by over 5 millions between 1939 and 1946. This increase is very unequally distributed over the various parts of Bizonia. The urban centres such as Nordrhein-Westfalen, Hamburg and Bremen (Berlin is excluded from the figures) have all decreased; the rural areas, specially Schleswig–Holstein, have shot up in population, the latter province by almost 70%. As a result of these enormous shifts in population, war losses and the influx of refugees, over 25% of the population of Bizonia were "foreigners," persons who had not been residents in the same area in 1939. This probably constitutes a record in mobility for a big country—or would it be equalled in the United States during the migration era? In the province of Schleswig–Holstein the proportion of "foreigners" is as high as 40%. With the shift in population from the urbanised industrial regions towards the rural areas the trend has been toward the "pastoralisation" advocated for Germany. However, currency reform may play its part in reversing this movement. It is worth noting that with the reduction in industrial population and increase in rural population the clock has been turned back to 1907 even though a high proportion of the rural residents is not actually engaged in agriculture.

The changes in age structure have been disastrous for the maintenance of real incomes. The increase in the proportion

of non-active age groups alone would account for a reduction in real incomes by no less than 30%. This does not take into account the high incidence of war-time invalids, poor nutrition and any other factors reducing productivity.

The main way in which the deficiency of men of active age groups may possibly be made good is by an increase in the proportion of women employed. In fact, however, the proportion of women employed has sharply fallen, even though the proportion of women in active age groups has not noticeably diminished. Some of the reasons for the low proportion of women at work are clearly of a permanent nature, since the difficulties of housekeeping will increase in direct proportion to the fall in production, thus setting up a vicious circle. The main reasons, however, are clearly in the unattractiveness of money earnings in the pre-currency reform era, and it should be one of the main results of currency reform to increase the proportion of women engaged in production.

One of the characteristics of the labour situation in Bizonia is a high degree of labour mobility which has been a contributory factor to low productivity. Rapid turn-over of labour accounts for most of the already low official unemployment figures. In one of the most interesting sections of the book, the author presents an estimate of real unemployment, including (apart from the neglible official figures) inefficient employment, loss of working hours through extra illness, fictitious contracts and absence of tools and capital requisites for employment. She arrives at a figure of 40%. If this figure is added to the 30% drop in output per head due to the unfavourable changes in age structure it will represent a pretty accurate estimate of the level of real output per head for Bizonia, which was running at about 40% of the pre-war figure in 1946.

Other interesting features arising from the book are that while in general the number of vacancies is in excess of the number of registered unemployed, among the clerical workers and also among the engineers and technicians the number of unemployed exceeds the number of vacancies more than ten times. The thought is suggested whether here is not a pool of qualified labour which could be put to very good use in the under-developed parts of the world.

Industrial productivity is also heavily reduced by enforced immobility due to lack of housing. The fortunes of war and after-war movements have dispersed urban workers including skilled workers into rural areas where there is no employment

for them; at the same time farmers have found themselves stranded in towns without immediate possibility of return.

Nothing has become known of any general policy of arranging for a re-distribution of population in the light of present production facilities; Bizonia in its present state can hardly wait for an improvement in the housing position to put an end to this state of affairs. According to data for the end of June, 1947, no less than 17·5% of all men and 14·5% of all women in the province of Schleswig–Holstein were engaged in occupations other than their own.

While the author is content to present statistical data—some of them admittedly of limited accuracy—and does not herself draw conclusions, perhaps it is already evident from the above brief summary of the material contained in this book that it provides a valuable factual background to the types of economic reform most urgently needed in Bizonia. It will pay harassed day-to-day administrators to take the few hours which are required to read this book and ponder on the implications of the tables presented.

H. W. SINGER

Lake Success,
U.S.A.

Europäische Aussenhandelsverflechtung und Marshallplan. By R. MUZIOL. (Kiel: Institut für Weltwirtschaft, 1947. Pp. 104.)

THIS publication is sponsored by the German Bureau for Peace Problems in Stuttgart. Its basic idea is very simple, namely on the basis of immediate pre-war data (mainly 1938) to analyse the foreign trade relations, firstly of the sixteen Marshall countries of Europe amongst each other, secondly of the European countries outside the Marshall Plan amongst each other, and thirdly of the two groups with each other.

The procedure is entirely statistical, and there is little attempt at real economic analysis. Since it is impossible to separate the figures for the eastern zone of Germany, Germany as a whole has been considered as part of "Marshall Europe." This naturally tends to over-rate the importance of Marshall countries in the European economy, a limitation of which the author is, perhaps, not quite aware in the latter part of his analysis. Since he himself is specially concerned to point out the key position of Germany in European trade, the division of Germany between Marshall Europe and the rest might also have affected his conclusions in a vital degree.

Since the procedure is mainly statistical and many of the basic tables are separately collected in a thirty-page statistical appendix, this book is especially useful as a time-saving short cut for researchers into the economic effects of the Marshall Plan.

The results of the analysis bring out some features which are quite educational for English readers. English students tend to overlook the very special structure of British foreign trade and almost instinctively assume that extra-European trade has similar importance for continental European countries as well. The author shows how far this is from the truth. In fact, and with the exception of England and France, European foreign trade is to an overwhelming degree centred in Europe. Europe is its own supplier and its own market. This is an indisputable fact; although one cannot always follow the author in his assumption that this fact is a sign of economic strength and stability. In fact, there is a general tendency running through this book to assume that because the pre-war economic structure of Europe was a complicated pattern, that for that same reason any change in it must necessarily lead to disruption and decline. A pattern is not necessarily good and desirable because it is complex.

Another important fact brought out by the author is that the degree of intra-European self-sufficiency in trade increases steadily as we move through Europe from north-west to south-east.

The author shows, and rightly stresses, the insignificance of the trade of eastern European countries outside the Marshall Plan with each other. On these figures one certainly gets the impression that western Europe is much more important to eastern Europe than *vice versa*. Here, however, the author fails to take due account of the fact that 1938 conditions may represent a very temporary and specific phase in European life. In the first place, the U.S.S.R. was unnaturally absent in the trade of eastern European countries; secondly, the eastern European countries had not then made their programmes for systematic—and to some extent concerted—industrialisation and economic development; thirdly, the dollar shortage had not reared its formidable head and put a special premium for Western Europe on supplies from non-dollar sources.

Finally, while the author is perfectly entitled to point out the key position of Germany evidenced by his trade statistics, one feels that he is not entitled to draw the conclusion that this

is a permanent feature of the European economy, without which it cannot be revived, and that Germany cannot be expected to play this key part again unless her imports are allowed to rise again to something like the pre-war level. These two propositions may be true, but they will need separate discussion and proof.

As will have been apparent from this review, this is a useful book as far as statistical analysis is concerned—the statistics are always well and carefully presented—but it is vitiated by a persistent bias of the author to assume that what existed in 1938 was a good or natural state which ought to be re-created.

H. W. SINGER

Lake Success,
U.S.A.

Land and Poverty in the Middle East. By DOREEN WARRINER. (London: Royal Institute of International Affairs, 1948. Pp. 149. 7*s.* 6*d.*)

MISS WARRINER knows a good deal about peasant farming, and about poverty at its worst—when there is no way out of it. Like her previous studies, *Economics of Peasant Farming* and *Food and Farming in Post-War Europe*, her new book is based on first-hand knowledge of local conditions, supplemented by extensive reading. War-time work with the Middle East Supply Centre has given her ample opportunities for personal observation on the spot and for checking the true meaning of official measures and statements of policy. An open mind and genuine interest in the human aspect of the problems of the Middle Eastern countries have been of much help in her research work.

The result is a realistic, well-informed analysis of the intricate patterns of these countries' economics, social structure and discrepant policies and requirements. To have stressed the discrepancies and incompatibilities rather than sought possible—or assumed—community of interests and purposes, is perhaps one of the major merits of this book. And the factual evidence on national income, over-population, land tenure, farming methods, and administration goes a long way to show how unwarranted is the assumption that the Middle East is a land of promise awaiting intelligently planned development as an economically coherent whole.

"Regional" methods of dealing with the economic troubles of independent states have proved successful during the War. But recent experience in Middle Eastern economics and politics

leads to the conclusion—largely borne out by Miss Warriner's survey—that these methods are likely to remain war-time expedients hardly compatible with the fanatical insistence on national sovereignty, displayed whenever concerted international action has been attempted since the end of the War. Used by different political and economic interests for their own ends, nationalism, at any rate in this part of the world, has become one of the main obstacles to practical dealing with the economic plight of the vast majority of its population.

The picture drawn by Miss Warriner is gloomy enough to discourage ready assumptions that rational development, backed by foreign investment, should lead to some kind of wholesale solution, and that the region's resources in oil might provide a short cut to such a solution. After outlining the reforms needed in land tenure, water supply and distribution, methods of farming and, no less urgently, in administration, an attempt is made to suggest what could be done in the circumstances surveyed. The measures recommended can be summed up—briefly and very inadequately—in this way: dry-farming techniques and soil conservation as recently tested and applied in the U.S.A. (instead of indiscriminate mechanisation); eradication of weeds; a lower seeding rate; a steady increase of the cultivated area per head; better cultivation of fallow land, based on village ownership of machinery and supervised by competent experts in the service of the state.

This looks like a realistic framework for the development that should be undertaken by the combined efforts of the Middle Eastern countries with foreign financial assistance. No spectacular results should, however, be expected; not even in the long run. Agriculture in the Middle East is not likely ever to become a profitable field for international investment. The physical conditions are simply not there, and the attitude of local governments and political parties towards foreign investors offers very little inducement to taking long-term risks on a businesslike calculation. As in so many cases of development financing, private capital will not be available and the job will have to be done by governments. In this connection Miss Warriner refers to the substantial sterling balances accumulated by Egypt, Iraq and Palestine; but she warns against optimistic expectations as long as inflation continues and social conditions remain what they are. Neither should the economic effects of the expanding oil production be over-rated. The bulk of new money that will come to Saudi Arabia and the Kuwait area is not likely to be spent on agricultural development. This new aspect of the Middle

East economy might have been more closely analysed and related to the survey as a whole, much to the benefit of the general reader.

The object of the study is to show that the success of development policies will depend not only on economic help from abroad, but, to a greater extent, on a general impetus towards better living standards—a broad popular movement strong enough to prevail against the local interests and political forces that oppose development. This suggestion is in keeping with the general trend of events in the Middle East. As Miss Warriner puts it, the whole area "is in a state of turmoil; it is no longer bound by tradition, and it has never, in historic times, been primitive." The present economic deadlock, so clearly described in this book, could not be broken by rational schemes of development, but much more likely—by the widespread social unsettlement that will accompany the further stages of the incipient awakening of the Middle Eastern populations.

N. MOMTCHILOFF

London.

Regional Planning in India. By R. BALAKRISHNA. (Bangalore: Bangalore Press, 1948. Pp. 424 + 21. Rs. 20.)

THE theme of Professor Balakrishna's work is that in general, and particularly in India, economic planning is to be preferred (for both social and economic reasons) to the free working of a competitive, capitalistic economy; that the decision to plan has been made in India; that such planning can best be carried out on a regioanl basis, with the example of the T.V.A. in mind; and that in order to introduce and implement regional planning it is necessary to analyse carefully the economic resources, structure, trends and potentialities of the country in order to establish principles and collect fundamental data to guide the planners and provide a sound basis for targets and priorities.

The author therefore attempts both to argue the case for regional planning and to collect and arrange the main factual data systematically. First, there is a discussion of the theory of Industrial Location. This is very disappointing, as it fails to take into consideration the broader, non-geographical factors determining location, and little use is made of this so-called "theory" in the rest of the book. Next, the author traces the development of India's principal large-scale industries, with special reference to their location, and changes therein. Professor Sargant Florence's "location factor" is worked out in each case. A factual study follows of the present distribution of India's

resources and production factors, on which basis the author then attempts to delimit "regions," which can reasonably be treated as economic entities. Up to this point the data employed refer to the situation up to 1939; so a special chapter is next devoted to the effects of the recent war, and war-time policy, on India's industrial structure and development.

Then come the arguments for economic planning, the nature and shortcomings of various plans proposed for India, and the principles which ought to underlie and guide planning in India, special stress being laid on regionalism, on the benefits to be obtained from State regulation of industrial location, and on the use of special transport rates to assist the development of backward regions. The last chapter outlines the structure of the reconstructed economy to be achieved by regional planning, and—as the bulk of the book was written before Partition was decided upon—a final "Note" deals with the economic consequences of Partition, and the changes thereby necessitated in the planning recommended.

It is therefore obvious that the author covers a wide field, and he certainly provides much valuable and interesting material. His factual data dealing with industrial development, the distribution of resources, war-time changes, the various "plans" proposed, and the economic aspect of Partition, bring together in convenient form (as do also his statistical tables in the Appendices) much material hitherto available only in widely scattered reports and other publications.

Criticism may, however, be directed towards both the arrangement of the work and some of the more theoretical arguments—to say nothing of a number of particular statements, both factual and theoretical, to which objection may be taken, but which limitations of space forbid us to discuss here. Throughout the work incomplete and rather disjointed arguments in favour of planning in general, of regionalism in particular, and of State control of industrial development and location, are mixed with the purely descriptive material, with the result that there is much repetition, whilst the main theoretical arguments are nowhere fully, clearly and forcibly stated and developed. Many examples could be given. Here it must suffice to point out that although a lack of coincidence between individual and social benefits and costs, and the desirability of equalising regional opportunities and development are advanced as important reasons for State intervention on a regional basis, nowhere are these concepts and their implications fully analysed.

No evidence is provided as to the probable extent and importance of the lack of coincidence referred to above. There is, again, no discussion of the relative merits of equalising regional development, or of promoting the interregional mobility of resources—assuming, for the moment, the desirability of equalisation.

Another argument for State control of industrial location, to which Prof. Balakrishna gives great weight, is that more rapid changes in industrial location or concentration could thereby be promoted, but he fails to explain why more rapid change is desirable. It is, indeed, too easily assumed throughout that Public Authorities will necessarily, *per se*, be embued with greater knowledge, wisdom and judgement than private entrepreneurs, and in general too little attention is paid to the effects of the policies advocated on costs and efficiency. The proposal to subsidise certain railway rates is a case in point. No mention is made of the effects of the increase in taxation entailed by a failure of the railways to cover costs, on Indian costs of production, and hence on India's competitive position and power to purchase by exports those capital and other goods which Prof. Balakrishna rightly regards as essential if India is to achieve any substantial economic reconstruction and improvement in the standard of life.

Some of these blemishes in a work which in many respects is useful and sensible, could, one feels, easily be removed. Others are more fundamental.

VERA ANSTEY

London School of Economics.

Economics of the Mount Hagen Tribes, New Guinea. By ABRAHAM L. GITLOW. (American Ethnological Society, Monograph XII, New York: J. J. Augustin, 1947. Pp. 108. $2.75.)

THIS short, but well-illustrated, study of the various aspects of social life and organisation affecting the "economics" of the Mount Hagen tribes, is a delight to read and handle. The author, who was trained as an economist, and has studied anthropology, was lucky enough, in 1945, to spend some weeks amongst the Mount Hagen people, who are "among the last in the world to come under the influence of modern industrial society," and to have access to the knowledge, advice and assistance of Father Ross—an American Missionary with

twenty years' experience of New Guinea, twelve of which were spent at Mount Hagen.

The author's object is to "cultivate the hiatus between anthropology and economics" by drawing a picture of a "functioning primitive society," and analysing the influence of the physical enviroment, social and religious institutions, and a variety of motives, upon economic activity. He therefore discusses the physical nature and resources of the area, social organisation, religion, agriculture, trade, institution of property, and the religious, social and economic feasts which play such an important rôle amongst these tribes, in relation to the economic life of the Mount Hagen people.

The broad question at the back of the author's mind is whether there are certain common elements of economic behaviour which can lead to general propositions or laws; or whether no such universal unifying principles exist, which would mean that there can be no universally valid economic theories, but that such theories "are in themselves part and parcel of cultural patterns." In the latter case economic theories would always have to be studied "in terms of the culture and conditions which produced them."

Mr. Gitlow's main conclusions, which are well supported by his evidence, at least with reference to a primitive society of the type studied, are that economic analysis cannot be purely deductive, and, in particular, cannot assume the prevalence of "economic behaviour" (in the narrow sense), but must take into consideration broader physical, social and religious facts, and the existence and economic effects of varied types of incentives. Amongst these tribes, for instance, the terms of exchange, or trade, depend not only or mainly upon conditions of supply and demand, but also upon such factors as friendship, rank and religion. These conclusions, and Mr. Gitlow's study in general, do not, however, provide a final answer to the broad question posed above. He certainly shows that it is incorrect to assume the predominance of the "economic motive" amongst primitive peoples. But this, surely, is not denied even by the "pure" economist, whose use of Robinson Crusoe analysis is not—as Mr. Gitlow seems to imply—intended to explain the economic functioning of primitive society. Although some of the assumptions made by economists may be false in relation to primitive peoples, they may yet prove adequate when applied to advanced communities; that is, to those types of society with which the economist is mainly concerned. This is no

criticism of Mr. Gitlow's methods and conclusions within his own field, which are both valuable and interesting. It is indeed to be hoped that studies of this type will check a tendency to extend assumptions legitimate for certain societies too readily to other types of communities.

VERA ANSTEY

London School of Economics.

Pallas. Vol. I. Botanik der Gegenwart und Vorzeit in Culturhistorischer Entwicklung. Ein Beitrag zur Geschichte der Abendlandischer Volker. By KARL F. W. JESSEN. (Waltham, Mass.: Chronica Botanica Co. London: Wm. Dawson, 1948. Pp. xx + 495. $6.00.)

EVER since man ceased to rely for his living upon hunting or pastoral pursuits and settled down to become a farmer, a knowledge of plants in health and disease, their physiology, their food requirements and their ability to withstand the consequences of being taken into other climates and other soils has been of the utmost economic consequence. Few recent works have thrown more light upon this than E. C. Large's *The Advance of the Fungi* (1940), which records how nearly the world was brought face to face with starvation by fungus diseases of plants a century ago.

Progress in farming systems to their modern form has indeed only been made possible by the work of the botanists in collection, classification and migration, in analysis and studies of plant physiology and nutrition, and in this book, the present reprint of which forms Vol. I of a series of reprints of out-of-print and classic scientific works with the collective title PALLAS, Jessen has traced the development of botany and its kindred sciences from classic times until his own day.

It would be foolish to belittle the British contribution to this subject that has been so conspicuous ever since the days of William Turner, and that became so much more important with the founding of the Royal Society and the work of the seventeenth-century workers like Kenelm Digby and Nehemiah Grew; but important though it was, this work was done as part of a development that was taking place all over Europe, and Jessen's book helps to put the British contribution in its proper perspective.

It was not, of course, until the seventeenth century that any real approach to a knowledge of plant nutrition was made. Bacon believed that water formed the principal nourishment of

plants. Van Helmont thought water was their life principal, and Boyle, who repeated Van Helmont's experiment with a different plant, believed he had confirmed it. Glauber a little later produced the hypothesis saltpetre, but Mayow thought plant life depended upon nitre, while Külbel in the eighteenth century was more vague with his *magma unguinosum* obtainable from humus, which leads to the mucilage beloved of Home and his successors. It would be redundant to follow the development of plant chemistry through the phlogistic period into the modern ideas as Jessen has done.

Besides dealing with this aspect of his subject Jessen necessarily discusses systems of plant classification that preceded Linnaeus and the work of the great botanists that preceded and followed him, but perhaps the most important part of the work for readers of the ECONOMIC JOURNAL consists in the discussions on practical farming and gardening and the literature of these subjects. And perhaps one of the most flattering of Jessen's remarks is that the love of nature is the fundamental characteristic of the whole of English literature as demonstrated in Scot's romances, a list that he might have lengthened both ways, but this remark is only appendant to an appreciation of the large contribution to the collection and development of economic plants, the sciences of plant physiology, diseases, chemistry and nutrition, and breeding that has been made in this country.

This reprint is more welcome perhaps as a work of reference than as a book to read, but it does contain in one volume much material that would only be found in a much larger modern work, or in separate sections in the works of different authors.

G. E. FUSSELL

London.

NOTES AND MEMORANDA

The Dual-Currency Problem[1]

A large part of consumers' expenditure in these post-war years requires the surrender of two kinds of currency—pieces of paper from the Bank of England, and pieces of paper from some Ministry. Nearly all the supplementary currency is exchangeable, not just for one good, but for a limited range of goods. Sugar coupons are available for white, brown and icing sugar; meat coupons for beef, veal, mutton, lamb and pork; bread units for many types of bread, cakes and flour. In fact, the only cases in which the consumer has virtually no choice at all are fats, eggs, bacon and petrol. Several of the dual-currency groups are very wide; thus, clothes coupons are available for all kinds of clothing, materials and footwear; utility furniture units for numerous types of furniture, some of which are closely rivalled by unrationed or second-hand furniture. There are cases in which two alternative supplementary currencies can be employed on the same goods, or on very close substitutes; thus dried egg is available both on points and on certain children's ration books; and tinned home-produced marmalade is distributed on points and on the jam ration. But these are rare exceptions, which we can safely ignore; and fortunately there are no ordinary consumers' goods requiring three currencies for their purchase.

In this world of dual currencies, what determines the individual consumer's choice? He enters a chosen time-period with certain resources in money—his income for the period, together with any of his liquid assets which he is prepared to spend in the period; and with a large selection of coupons and units, doled out to him (in accordance with principles which

[1] This note is highly unoriginal. A simple version of the problem was set in the Cambridge Tripos in 1947; Professor D. H. Robertson drew my attention to some doubts regarding the correct solution, and showed me notes by Prof. R. G. D. Allen, Mr. Harrod, and various Cambridge students. The previous literature consists of:

G. D. N. Worswick, "Points, Prices and Consumers' Choice," *Bulletin of the Oxford Institute of Statistics*, 1944.

K. W. Rothschild, "Rationing and the Consumer," *Oxford Economic Papers*, 1945.

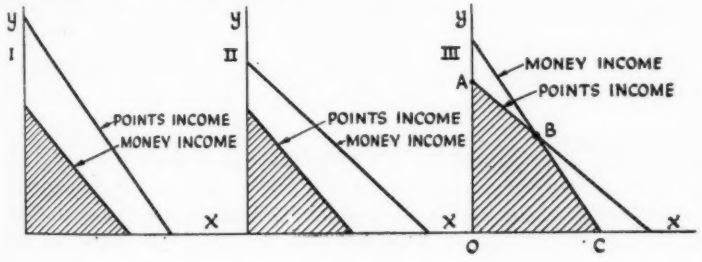
H. Makower, "Rationing and Value Theory," *Review of Economic Studies*, 1945–46.

Substantially the same conclusion has been reached independently by Mr. J. de V. Graaff of St. John's College, Cambridge.

need not concern us) by the State. These currencies he can spend on the consumer goods which he sees before him in the shops, or on the purchase of (points-free) stocks and shares, insurances etc.; or he can save them by keeping the original items of currency. All the types of currency can be saved, but whereas the risk of the invalidation of bank-notes is small, it is certain that food-points will become invalid in a month, furniture units in a year, and clothes coupons in two or three years. It is rather inconvenient to work in time-periods of three years; so the saving of "points" must not be ruled out. The risk of invalidation lessens the utility of saving "points," just as fears for the currency lessen the utility of saving money.

The prices to the individual consumer of all goods, in terms both of money and of points, can be taken as given—whether by administrative decision, or by the higgling of the market. We are not here concerned with demand in the whole market. The stock in the shops we shall (indefensibly) suppose to be unlimited in relation to individual needs; and the consumer will be supposed to have a rational scale of preferences. The interesting case (on which we shall concentrate) is that in which points-values vary and are to some extent independent of money-values: that is, the types of rationing applying to clothes or to tinned food, as distinguished from sugar rationing (which has an equal points-value for all the types of sugar) or meat rationing (where the size of the ration is inversely proportional to the price).

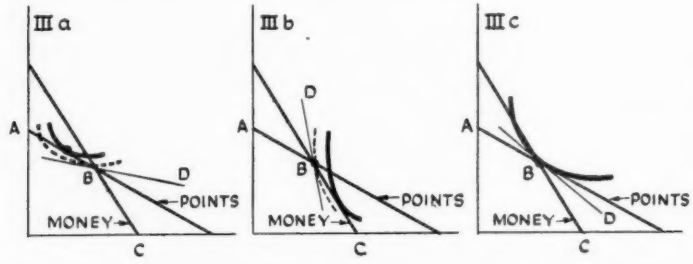
The simplest case occurs when no saving is permitted, and there are only two commodities, both of which require the use of both currencies. As Worswick and Rothschild show, the indifference map for the two commodities then carries a "points-income line" as well as a "money-income line," and these lines jointly determine an area, which we may call the "area of possibility," which lies within the reach of the consumer with his given incomes. There are three cases, illustrated below, the "area of possibility" being shaded:



In each diagram the "money-income line" represents those combinations of x and y which the given money income will buy; and the "points-income line" those combinations which the points income will buy. All the combinations of x and y which (in the old phraseology) are equal in their utility to the consumer lie on an indifference curve, which is convex to the origin; and the indifference curves for different utilities form a non-intersecting family, curves of higher utility being farther from the origin. Rational buyer's choice therefore consists of getting on to the highest indifference curve which can be reached from the area of possibility: that is to say, on to the highest curve which passes through any point of the outer perimeter of that area.

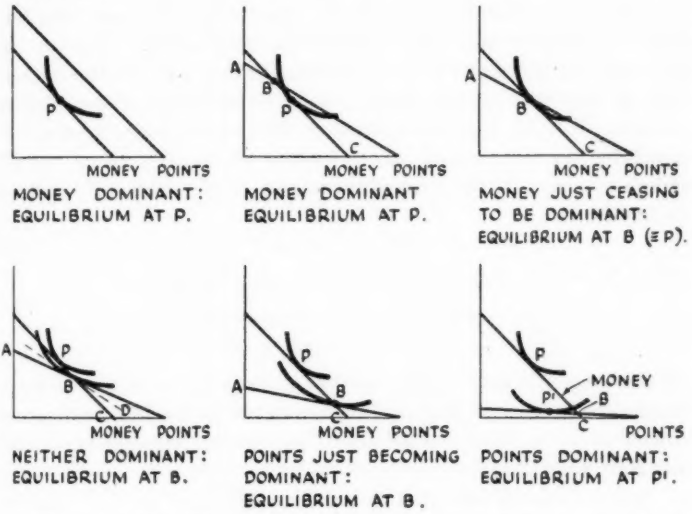
Diagram I is the case of the poor consumer, who has so little money that points are of no importance to him. The best he can do is to get to that (unique) indifference curve which just touches his money-income line; he is in effect living in a single-currency world, in which choice is correctly made when the marginal utilities of x and y with respect to money are equal. We shall say that in this case money is *dominant*; and the buyer may as well throw away his surplus points, for which he has no use. (The possibility of selling points on the black market for money is here ruled out, but will be discussed later.) Diagram II is the case of the rich man, for whom points are dominant, and who must therefore equalise marginal utilities with respect to points. His surplus pound notes may as well be burnt.

Diagram III represents an interesting intermediate case, in which the best choice may be on an indifference curve touching AB, or on a curve touching BC or on the (unique) curve which passes through B; as is shown below:



The optimum position depends on the slope of BD, the tangent to the indifference curve through B: that is, on the marginal rate of substitution between x and y. If BD is as flat as or flatter than AB (a little bit of y exchanging for a lot of x) the curve

touching AB is higher than that through any point of BC; in the case shown, points are dominant (though with different prices the flatter line might represent money). If BD is steeper than BC, the best curve touches BC and money is dominant. But if BD lies, in slope, between AB and BC, the best that the consumer can do is to spend all his points and all his money, at the point B; and (unless the curve through B happens to touch AB or BC) marginal utilities are not equalised with respect either to money or to points. Thus if we suppose money income fixed, while the points-value of y is increased, so that AB turns about its point of intersection with the x-axis, the successive stages are as follows:



Thus far Mr. Worswick. But we do not live in a world of two commodities; and it is usual in indifference-curve analysis to proceed next to consider an exchange between a single commodity x and a composite commodity y, "all other goods." "Can we take this step for both money *and* points?" Mr. Worswick asks; but the rest of his article provides no clue to the answer.

The device of the composite commodity is a concession to the inability of the human mind to think in n dimensions; it will be safer not to adopt it. If we have *three* commodities, all subject to both currencies, the argument above still applies. We have a set of indifference surfaces, a points-income plane, and a money-income plane. Equilibrium is reached on the highest indifference surface which can be attained at any point (on the

outer surface) of the "volume of possibility," which is bounded by the two income planes and the planes of co-ordinates. This equilibrium is either at a tangency to the points-income plane ("points dominant"); or at a tangency to the money-income plane ("money dominant"); or at that point on the line of intersection of the income planes where the highest indifference surface is reached—which occurs uniquely when a surface touches a plane through the line at a point on the line. There is a unique combination of two commodities which uses all the money and all the points; but in the case of three commodities there is a single infinity of such combinations, and a further choice has to be made.

So in the case of n commodities, all subject to both currencies: the poor man will find money dominant, the rich man will find points dominant, and an intermediate class will choose from the $(n-2)$-fold infinity of combinations which use all the money and all the points that combination which yields them highest utility. In fact, if a money-income M and a points-income P is available to buy goods in quantities $x_1, x_2 \ldots x_n$ at money prices $m_1, m_2 \ldots m_n$ and points prices $p_1, p_2 \ldots p_n$, we have a utility function:

$$U(x_1, x_2 \ldots x_n)$$

which has to be maximised subject to the conditions:

$$\left.\begin{aligned} m_1x_1 + m_2x_2 + \ldots + m_nx_n &= M \sin^2 \theta_m \\ p_1x_1 + p_2x_2 + \ldots + p_nx_n &= P \sin^2 \theta_p \end{aligned}\right\}$$

In these equations the factors $\sin^2 \theta_m$ and $\sin^2 \theta_p$, which for differing values of θ_m and of θ_p vary always between 0 and 1, are introduced to allow for the possibility that the money and points are not fully used.

The solution is obtained by maximising

$$\begin{aligned} V = U &- \lambda_1(m_1x_1 + \ldots + m_nx_n - M \sin^2 \theta_m) \\ &- \lambda_2(p_1x_1 + \ldots + p_nx_n - P \sin^2 \theta_p) \end{aligned}$$

with respect to $x_1, x_2 \ldots x_n$, θ_m and θ_p: which yields the equations:

$$\left.\begin{aligned} \frac{\partial U}{\partial x_1} &= \lambda_1 m_1 + \lambda_2 p_1 \\ \frac{\partial U}{\partial x_2} &= \lambda_1 m_2 + \lambda_2 p_2 \\ \vdots \quad &\quad \vdots \quad \quad \vdots \\ \frac{\partial U}{\partial x_n} &= \lambda_1 m_n + \lambda_2 p_n \\ 2\lambda_1 M \sin \theta_m \cos \theta_m &= 0 \\ 2\lambda_2 P \sin \theta_p \cos \theta_p &= 0 \end{aligned}\right\}$$

There are thus the following possibilities:

(*a*) $\lambda_1 = \lambda_2 = 0$: in which case U is independent of $x_1 \ldots x_n$, which is hardly an interesting case.

(*b*) $\lambda_1 = 0$ and $\theta_p = 0$ or $\pi/2$. If $\theta_p = 0$ no points are spent; this is easily shown to be a point of minimum, rather than of maximum, satisfaction. With $\theta_p = \pi/2$ we have :

$$\left.\begin{aligned} \frac{\partial U}{\partial x_i} &= \lambda_2 p_i, (i = 1, 2 \ldots n) \\ p_1 x_1 + \ldots + p_n x_n &= P \end{aligned}\right\},$$

$(n + 1)$ equations to determine $x_1, \ldots x_n$ and λ_2. These are precisely the equations for the equilibrium when only the points currency operates; and (subject to certain conditions upon U and its derivatives, usually satisfied) it gives a point of true maximum satisfaction. This is the case when points are dominant.

(*c*) $\lambda_2 = 0$ and $\theta_m = 0$ or $\pi/2$ gives likewise a degenerate case when $\theta_m = 0$, and the " money-dominant " case when $\theta_m = \pi/2$.

(*d*) Clearly neither θ_m nor θ_p must be zero for a maximum : the remaining case is therefore when $\theta_m = \theta_p = \pi/2$, which implies that all the money and all the points are used. We then have :

$$\left.\begin{aligned} \frac{\partial U}{\partial x_i} &= \lambda_1 m_i + \lambda_2 p_i, (i = 1, 2 \ldots n) \\ m_1 x_1 + m_2 x_2 + \ldots + m_n x_n &= M \\ p_1 x_1 + p_2 x_2 + \ldots + p_n x_n &= P \end{aligned}\right\},$$

$(n + 2)$ equations for the quantities $x_1 \ldots x_n$, λ_1 and λ_2; so that a determinate solution still exists. The equations are capable, subject to certain conditions on U, of giving a true maximum. The form of the solution shows that it is reached on a hyperplane through the intersection of the two income hyperplanes, with the further condition (sufficient to give a unique solution) that the maximum lies in the intersection itself.

It remains to show that two of (*b*), (*c*) and (*d*) cannot be fulfilled at the same time at different points. Suppose, in fact, that there are two maxima on the same or different hyperplanes. Proceeding from one to the other by any path in the income hyperplanes, the utility function varies continuously, and must therefore have a minimum. The aggregate of all these minima must itself in general have stationary points, which are stationary points of the whole system other than those we have found. But the list given above is exhaustive; no such points exist.

This sketchy and unrigorous mathematical treatment serves to buttress the common-sense conclusion, that there is a solution for n commodities analogous to that for two or three. But it does more; it enables us to deal without difficulty with the " real

world " in which some goods are not on points. Suppose, in fact, that x_1 is the commodity " saving of points " (so that $m_1 = 0$); that x_2 is " saving of money," with $p_2 = 0$; and that $x_3, x_4 \ldots x_k$ are points-free goods. Case (*b*) then has the equations :

$$\left.\begin{aligned} &\frac{\partial U}{\partial x_1} = \lambda_2 p_1 \\ &\frac{\partial U}{\partial x_2} = \ldots = \frac{\partial U}{\partial x_k} = 0 \\ &\frac{\partial U}{\partial x_i} = \lambda_2 p_i, \ (i = k+1, k+2 \ldots n) \\ &p_1 x_1 + p_{k+1} x_{k+1} + p_{k+2} x_{k+2} + \ldots + p_n x_n = P \end{aligned}\right\}$$

But the marginal utilities of $x_2 \ldots x_k$ are *not* in general zero; *points cannot be dominant.* So likewise money cannot be dominant *unless* we make the (more plausible) assumption that the marginal utility of saving points is zero. In that case we have $\frac{\partial U}{\partial x_i} = \lambda_1 m_i$ $(i = 2, 3 \ldots n)$ and $m_2 x_2 + m_3 x_3 + \ldots + m_n x_n = M$: n equations to determine $x_2 \ldots x_n$ and λ; and x_1 is the surplus of points left when this solution has been found.

Housewives must be supposed in general, therefore, to take account both of money and of points; unless they are very poor, and saving points is considered useless, in which case they take account of money only. This is the solution at which Mr. Rothschild hints in a footnote, but which he fails to develop in the text. It is indeed obvious that if an optimum allocation, considering points alone, happens to fall on goods expensive in money, the consumer may prefer a less satisfactory distribution of points which leaves more money over for expenditure on non-pointed lines.

Now $\frac{\partial U}{\partial M} = \frac{\partial U}{\partial x_1}\frac{\partial x_1}{\partial M} + \ldots + \frac{\partial U}{\partial x_n}\frac{\partial x_n}{\partial M}$

$= (\lambda_1 m_1 + \lambda_2 p_1)\frac{\partial x_1}{\partial M} + \ldots + (\lambda_1 m_n + \lambda_2 p_n)\frac{\partial x_n}{\partial M}$ in case (*d*)

$= \lambda_1\left(m_1\frac{\partial x_1}{\partial M} + \ldots + m_n\frac{\partial x_n}{\partial M}\right) + \lambda_2\left(p_1\frac{\partial x_1}{\partial M} + \ldots + p_n\frac{\partial x_n}{\partial M}\right)$

$= \lambda_1\frac{dM}{dM} + \lambda_2\frac{dP}{dM}$, the two expressions in brackets being the result of differentiating the left-hand sides of the income equations. (The m_i, the p_i and P are all independent of M.)

$= \lambda_1 . 1 + \lambda_2 . 0$

$= \lambda_1$

Thus, λ_1 equals the rate of increase of utility with money income; that is, it is an index of the marginal utility of money income. Similarly λ_2 is an index of the marginal utility of points income. The marginal rate of substitution between two goods is equal to the ratio of two quantities which represent, for the two goods, the *sum* of the marginal utilities of the money and the points expended. As money income increases, this becomes more and more nearly equivalent to the ratio of the marginal utilities of the points—that is, to the ratio of points prices; but no man, however rich, ever leaves money entirely out of account, for he still has non-pointed goods to buy. If points can be saved, then as money income decreases the marginal rate of substitution tends to equality with the ratio of money prices; but no man, however poor, leaves points entirely out of account as long as it is still worth while to " save " points—*e.g.*, in the hope that clothes will become cheaper. But if points are not saved, the argument above shows that money must finally become wholly dominant.

There is no difficulty in extending the argument to cover a set of non-overlapping or overlapping points systems. The remaining possibility of interest is that money should be exchangeable into points on the black market, at a price which is fixed from the point of view of the individual consumer. Let a shilling buy r points. Money or points will clearly not be thrown away if they can be sold. Then we have to maximize U subject to new conditions,

$$\left.\begin{aligned} m_1x_1 + \ldots + m_nx_n &= M - M' \\ p_1x_1 + \ldots + p_nx_n &= P + rM' \end{aligned}\right\} \text{ where } M' \text{ is positive or negative.}$$

Considering

$$V = U - \lambda_1(m_1x_1 + \ldots + m_nx_n - M + M') - \lambda_2(p_1x_1 + \ldots + p_nx_n - P - rM')$$

the conditions are

$$\frac{\partial U}{\partial x_i} = \lambda_1 m_i + \lambda_2 p_i \quad (i = 1, 2 \ldots n)$$

$$0 = -\lambda_1 + r\lambda_2$$

Thus $\dfrac{\partial U}{\partial x_i} = \lambda_1\left(m_i \partial M \dfrac{p_i}{r}\right)$ and, repeating the previous argument,

$$\begin{aligned} \frac{\partial U}{+} &= \lambda_1\left[\frac{\partial}{\partial M}(M - M')\right] + \lambda_2\left[\frac{\partial}{\partial M}(P + rM')\right] \\ &= \lambda_1 + \frac{\partial M'}{\partial M}(-\lambda_1 + r\lambda_2) \\ &= \lambda_1 \quad : \quad \frac{\partial U}{\partial P} = \lambda_2 \text{ similarly.} \end{aligned}$$

Thus the consumer buys or sells points until the marginal utility of money equals the marginal utility of the number of points which a unit of money will buy; and he then acts as though there were one currency only, and all money prices were increased by the money-equivalent of the points values. The position is precisely that which would occur if a shopkeeper offered to sell a chair for six pound notes and 84 silver shillings, shillings being freely convertible at 20 to the pound; the buyer would think of the chair as being priced at £10 4*s*. 0*d*.

The consumer who happens to be so poor as to find money "dominant" will certainly sell some of the points he would otherwise waste. Since no one takes points values as the sole arbiter, will he find a buyer? Clearly he will; the rich man, although in the absence of a black market it is best for him to use all his money and all his points, finds the marginal utility of the restricted points higher than that of the freely-flowing money; it will pay him to buy points until equivalent quantities of money and points have the same marginal utility.

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PROFIT MEASUREMENT AND THE TRADE CYCLE

MR. LACEY'S article on this subject in the December 1947 issue of the ECONOMIC JOURNAL is an important contribution to an important subject. Perhaps, therefore, some brief comment on his article is not out of place.

1. Mr. Lacey omits in his article to mention one fact which one feels goes a considerable way towards offsetting those distortions of true profits over the trade cycle by present accounting techniques which are the target of his criticism. This is the practice of firms to plough back profits into the business in good years through retention of profits. This also tends to stabilise dividends in a depression since assets have already been excessively written down in good years releasing income for distribution in times of depression. This business policy of retaining profits may be considered as an attempt—perhaps an unconscious attempt—to correct and offset accounting practices giving rise to misleading profit statements. The capital reserves for which Mr. Lacey calls in times of rising prices and rising inventory values are in fact being collected in the form of undervaluation of fixed assets. This may be a somewhat cumbersome and roundabout way of

adjusting the capital of firms in the way Mr. Lacey suggests, but his article should not give the impression that nothing in that direction is now being done. To put it another way: the spurious profits representing a rise in the value of raw materials between the date of purchase and the date of sale are, in fact, offset by a corresponding undervaluation of fixed assets.

2. Mr. Lacey takes it for granted that exaggeration of profits in a boom and the undervaluation of profits or exaggeration of losses in a slump is an element of economic instability. It seems rash to take this for granted. In the first place, the exaggeration of profits in a boom must be expected to lead business men to raise their prices less than they otherwise would; vice versa, in a slump, prices will be lowered less than they otherwise would be. Hence, present accounting techniques contribute to price stability, and in periods of elastic price expectations—such as are likely to obtain at least at the extreme points of the trade cycle—price stability may be an important element in economic stability. Second, low prices in a boom may also prevent over-investment by reducing the desire to enter the industry or add to existing production facilities. Third, and perhaps most important, if firms are tempted, through exaggerating their profits in the boom, to pay out more than their true profits, this will correspondingly reduce the funds which they have available for new investment and thus contribute to economic stability. Exaggeration of losses will induce firms to strengthen their liquidity position which in due course will increase their willingness and inducement to invest. The increased liquidity of firms in a depression is held by most economists to be an essential factor in the subsequent recovery.

3. One does not feel that Mr. Lacey has fully explored the alternative of valuing stocks at fixed unit values. A closer examination of this alternative than he gives it [1] would probably have led him into realising the advantages of a standardised system of accountancy, not only for the evaluation of the technical efficiency of firms but also for a true measurement of profits. The last-in first-out (lifo) method which he mentions is an unsatisfactory half-way house between money accounting and physical standard accounting. In fully "physical" accounting, not only are the changing values of stocks eliminated, but also changing prices of machinery, changing wage rates and the effects of sales policies. The solution to Mr. Lacey's problems may well in the end come from the cost accountants and not from the financial accountants.

[1] On p. 469 of his article.

Finally, as a footnote to the history of economic thought it may be pointed out that the profit distortion and its trade cycle effects which form the subject of Mr. Lacey's article were already noted in the 1920's and developed into a fully elaborated trade-cycle theory in which profit distortion was actually treated as one of the major causative factors of trade cycles. This was done by F. Schmidt in his book, *Die Industriekonjunktur-ein Rechenfehler* (Trade Cycles—an Accounting Error).

This book was published in 1927.

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VALUE AND PRICE OF PRODUCTION: A NOTE ON WINTERNITZ' SOLUTION [1]

THAT the "transformation problem" remains controversial even in its purely formal aspects is testimony to the isolation of two streams in the history of economic doctrine—the "orthodox" economics of respectability and the "bootleg" political economy of Marx. This isolation has resulted in two jargons with the most confusing differences of meaning at points of apparent similarity and in the refusal, by and large, of partisans of either doctrine to consider seriously any method previously contaminated by adherents of the other. For example, orthodox economists have practically ignored technological change while Marxists have generally shied away from the mathematical method.

The note by Winternitz is a step in the right direction. His equations show that if value and price of production are defined according to Marx, there exists a simple transformation connecting the two. The transformation is independent of any equilibrium conditions (which appear redundantly in Bortkiewicz) and preserves the total of values. The "transformation problem" in the formal sense of linking value and price of production is seen to be practically trivial mathematically. Winternitz thus clears up an artificial confusion initiated by Bortkiewicz, whose pseudo-mathematical mystifications bore little or no relation to the basic problem posed by Marx.[2] The real problems in this field are not

[1] J. Winternitz, "Values and Prices," ECONOMIC JOURNAL, 1948, pp. 276 *et seq.*

[2] When redundant algebraic verbiage is cleared away, the solution of Bortkiewicz (which was reproduced by Sweezy) is seen to be the same as that of Winternitz except that Winternitz defines price of production so that the total of values equals the total of prices of production, whereas Bortkiewicz substitutes an *ad hoc* assumption. It is Winternitz, of course, who is consistent with Marx.

to be found in the alleged difficulty of relating value and price of production, but in relating these two concepts to actual prices, to the actual exchanges, which, it must be remembered, are not involved in the definitions of value and price of production in terms of labour time involved in the productive process.[1] Nevertheless, clarity on formal matters (practically matters of definition) is a prerequisite to the use of a theoretical structure in dealing with significant problems.

We mention, therefore, a few points which appear to remain unclear and which illustrate the terminological and methodological difficulties indicated in the first paragraph. In the first place, there is in the note by Winternitz an apparent identification of price of production with price in the ordinary sense of the ratio at which an actual exchange takes place. But the two are different concepts, just as distinct as value and price. In orthodox usage value is simply another term for price, or, more strictly speaking, price is value per unit commodity. With Marx, "value" is a social relation dependent only on the technology and sociology of production. "Value" and price not only may not coincide quantitatively, but their coincidence would imply conditions which "could not exist without abolishing the entire system of capitalist production."[2] To emphasise the distinction, Marx pointed out that a commodity may have a price without having a value.[3] But the "price of production" is with Marx a form of value, derivable from value, and like it equally distinct from price.[4] Not only may price deviate from price of production, but a commodity may have a price without having a price of production. Marx maintained that value and price coincide under conditions of simple commodity production and under certain average conditions of competitive capitalism. He assumed that value and price coincide throughout Vols. I and II of *Capital*, an assumption equivalent to considering only average and aggregate

[1] Marx deals with this question in *Capital*, Vol. III, Ch. X. He considers in detail the relations between market-value (average value of the commodities of a certain type) and market-price (average sale price of the same) and concludes with the remark that the same discussion holds with suitable modifications when price of production is substituted for market-value.

[2] *Capital*, Vol. III, p. 181. [3] *Capital*, Vol. I, p. 115.

[4] "In volumes I and II we were dealing only with the *values* of commodities. Now we have dissected this value on the one hand into a *cost-price*, and on the other we have developed out of it another form, that of *price of production* of commodities." (Vol. III, p. 192. Marx' italics.) The entire discussion in Ch. X, Vol. III, makes clear that Marx is considering three distinct entities: value, price of production and price. For example: "It is a matter of definite differences in quantity between market-prices and market-values, and, further, prices of production" (p. 229).

relations. In Vol. III Marx argues that price of production and price coincide, or more precisely that market-price of production serves as a norm around which market-price oscillates.[1] In writing about socialism, some writers have argued that prices should be set according to values, while others have maintained that they should be set according to prices of production. It is these statements about relationships between the value concepts (value, market-value, price of production, etc.) and actual prices (price, market-price, etc.) which pose the significant economic problem. The relationship between value and price of production is hardly more than a formal preliminary.[2] The solution of Winternitz is limited to the relation of value and price of production, but the use of " price " in place of " price of production " suggests otherwise.

With respect to Winternitz' mathematical derivation, it should be noted that his method is independent not only of the conditions of simple reproduction (as he correctly points out) but also of the context of the division of the economy into three branches. The derivation may be interpreted as an example, for the case $n = 3$, of the way in which values and prices of production of the n commodities in the economy are related. This interpretation would, in addition, be closer to Marx, who used calculations primarily as illustrations to accompany verbal arguments which combined process and cross-section analysis in a way which could hardly be fitted to the mathematical techniques available even to-day.[3] Winternitz' derivation is limited strictly to the relation between values and prices of production at an instant, actual prices and economic processes in time not being directly involved.

Since Winternitz clarifies one mathematical confusion, it is unfortunate that he repeats another. Bortkiewicz started his discussion of the transformation problem with given values of constant capital (capital goods), variable capital (labour-power),

[1] " We call it price of production. It is, as a matter of fact, the same thing which Adam Smith calls *natural price*, Ricardo *price of production*, or *cost of production*, and the physiocrats *prix nécessaire*, . . ." (Vol. III, p 233.)

[2] " In these capitalist processes it is not a question of the formal conversion of the value of commodities into prices, not a question of a mere change of form " (*ibid.*, p. 229). " The real difficulty lies in the question : How is this equalisation of profits into an average rate of profit brought about, seeing that it is evidently a result, not a point of departure " (*ibid.*, p. 205).

[3] Marx was acquainted with the calculus, but like Marshall and many other economists, he used more mathematics in working out his results than he did in presenting them. See, in this connection, Engels' prefaces to *Capital*, Vols. II and III.

surplus value and value of output in each of three divisions of production: those producing capital goods, wage goods and luxury goods. He then derived from these the prices of production of the same items. He also found a formula for the average rate or profit under exchange at prices of production. This formula involved the original values only from the first two divisions of production, and Bortkiewicz drew the conclusion that the profit rate is, in fact, independent of the division producing luxury goods. But Bortkiewicz assumed that the original values satisfied the equilibrium conditions of "simple reproduction," from which it follows that the values in the first two divisions are related to those in the third, and hence the rate of profit is not independent of division three. One could, by utilising his equilibrium conditions, rewrite the formula for the profit rate so as to involve the values from division three.[1] Although Winternitz' solution is in other respects different from that of Borkiewicz, he derives the same formula for the average rate of profit. Since Winternitz does not assume that the values satisfy equilibrium conditions, one cannot say as above that the profit rate does depend on all three divisions. On the other hand, one cannot conclude that it is independent of division three. It all depends on whether the original values in the three divisions are, in fact, independent or not. They may still be related even if equilibrium conditions are not satisfied, and they are not made independent merely by our failure to write down some explicit relations between them. If the independence of the values is explicitly assumed or, which I think unlikely, proved by some economic argument, then the independence of the profit follows from the formula. As it stands, the conclusion is merely the result of an implicit assumption that variables are independent until proved otherwise.

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REAL WAGE-RATES: A NOTE

(1) IN his article on *The Food Subsidies* in the ECONOMIC JOURNAL of June 1948, Professor Pigou says that "whereas . . . during the First World War and its immediate aftermath real wage-rates on the average just about held their own, this time, so far as the statistics give a fair picture of the facts, they have risen

[1] Maurice Dobb called attention to this question in his review of Paul Sweezy's *Theory of Capitalist Development* in *Science and Society*, No. 3, 1943, p. 274.

against 1938 by no less than 45% " (p. 207). This figure seems mistaken. It refers to June 1947, in which month Professor Pigou says money wage-rates " had reached some 75% above their 1938 level "; real wage-rates are " measured by the money wage-rate divided by the cost-of-living index " (p. 204). A rise of 75% in money rates giving a rise of 45% in real rates implies a rise in cost of living of only 21%.

(2) We have: (*a*) The London and Cambridge Economic Service index of average weekly wage-rates gives 104¼ for 1938, and 179½ for June 1947, a rise of 72%; (*b*) the corresponding figures in the Ministry of Labour index of weekly wage-rates are 99½ and 166½, a rise of 67%; (*c*) the old cost-of-living index stood at 131 in June 1947, as compared with 101 for 1938, a rise of 30%. Applying (*c*) to (*a*) gives an apparent rise in real wage-rates of 32%; to (*b*), of 28%.

(3) But in any case the old cost-of-living index cannot fairly be used here. It gave food a weight of 60%, tobacco under 1% and included no alcoholic drink; goods liable to purchase tax had a weight of not more than 0·5%.[1] The wage-earners' budgets collected in 1937–38, and used (after adjustment to the relative prices of June 1947) in the new Interim Index of Retail Prices, gave food a weight of only 34·8%, but drink and tobacco as much as 21·7%, and goods such as may bear purchase tax, up to 10%.[2] Professor R. G. D. Allen[3] has used the weights of the Interim Index to recalculate the change in the cost of living from 1938 to June 1947, and finds a rise of 60%, which " may still be a little on the low side." Applying this to a rise of 72% in money wage-rates gives a rise in real wage-rates of 7½%. For July 1948 the corresponding figures are: money rates 85%, cost of living (Interim Index spliced to Professor Allen's index) 73%, rise in real wage-rates 7%. This has still to be adjusted for the effects of quantitative restrictions.

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[1] *The Cost of Living Index Number. Method of Compilation*, para 27. (H.M.S.O., 1944.)

[2] Para. 13 of Supplement No. 2 (Jan. 1948) to the *Industrial Relations Handbook*, 1944.

[3] London and Cambridge Economic Service, Bn. III, Vol. XXV, Aug. 1947, and Bn. I, Vol. XXVI, Feb. 1948.

OFFICIAL PAPERS

The Progress of European Recovery

Both of these two official documents[1] are intended to give a picture of the economic situation in Europe up to about the third quarter of 1947. The first is in almost every way an excellent piece of work. It gives just the information that one wants; it is careful in analysis; it is sufficiently wide in scope to render a general synthesis possible. It is short, a large part of the book (86 pages) being devoted to two appendices. One of these appendices summarises the economic plans of a number of European countries; the other justifies or explains the statistics employed. I propose to ignore plans and consider only the findings contained in the Survey itself.

The process of recovery in 1946 and up to the third quarter of 1947 may be summarised as follows :—

Indices of European Recovery

	First quarter, 1946.	Last quarter, 1946.	Third quarter, 1947.
Industrial Production (1938 = 100)			
Europe, excluding Germany :			
Total + Building	80	98	99
Major Investment Goods	74	98	104
Textiles	68	86	91
Europe, including Germany :			
Total + Building	—	—	86
Major Investment Goods	—	—	85
Textiles	—	—	85
Quantum of Trade (1938 = 100)			
15 leading countries, including Germany :			
Imports	56	76	86
Exports	39	63	67
14 countries, excluding Germany :			
Exports	49	81	85
Agricultural Production (1935–8 = 100)	1945–6.	1946–7.	
24 countries, including Germany	63	75	
23 countries, excluding Germany	62	76	
Europe, Total :			
Bread Corn	—	75	
Coarse Grains	—	73	
Milk	—	71	

[1] *A Survey of the Economic Situation and Prospects of Europe.* U. N. Department of Economic Affairs. (Geneva: United Nations, 1948. Pp. x + 206. 12*s.* 6*d.*)

Inventaire Economique de l'Europe. Institut National de la Statistique et des Études Economiques. (Paris: République Française. Ministère des Affaires Economiques. Presses Universitaires de France, 1947. Pp. xxxvi + 555. 800 fr.)

Emphasis is laid on the fact that there was a slackening in the rate of recovery both in production and in trade during 1947. Had the last quarter of that year been included, however, a somewhat more favourable picture would have been presented. No estimate is made of agricultural production in 1947–48, but we know now that it is estimated to have fallen back to about 66 as compared with 75 in the previous year.

The value of this survey is greatly increased by a careful comparison of recent developments with the experience after the First World War. The following indices based on the last pre-war year or quinquennium are of particular interest and may help to remove some current pessimistic illusions.

Comparison with 1918–21

	1920.	1946.	1921.	1947.
Coal Production :				
Europe	82	72	72 (88)	81
Europe, excluding Germany .	79	84	64 (86)	90
Steel Production :				
Europe	67	60	56 (77)	70
Europe, excluding Germany .	72	93	48 (71)	107
Bread Corn	66	72	64	[58]
Livestock :				
Cattle	92	88	94	
Sheep	86	90	90	

Comparison between 1921 and 1947 is not very satisfactory as the coal strike in England lowered the European average so greatly in the earlier year. For this reason I have entered the figures for 1922 in brackets. When allowance is made for special factors such as strikes and drought the similarity between the two sets of figures is striking. The one difference of really major importance is, of course, the much greater destruction—and subsequent disruption—suffered by Germany. In spite of this fact, however, as the Survey remarks, "The rate of industrial recovery was . . . . definitely higher after the second world war than it was after the first."

After reviewing the recovery in production and trade the authors of this Survey turn to what "is beyond question, the most critical feature of Europe's current economic situation"—the balance of payments. Curiously enough Europe had, it appears, exactly the same trade deficit in 1919–20 and 1946–47, namely 12 billion current dollars. But in the earlier period this was partly offset by a surplus on invisibles of $4 billion and on the latter increased by a deficit on invisibles of $1·3 billion. There

lies the crux of the matter, and one of the most interesting sections of this very valuable publication is devoted to a consideration of what can be done to restore a more balanced situation in the future.

Attention is drawn to the fact that the deficit is due only in a minor degree to changes in the real volume of trade. The total deficit of $13·3 billion is made up of the following net changes as compared with 1938: (1) in invisibles $5·5 billion, (2) in trade balance due to real volume of trade $2·15 billion, (3) in trade balance due to price changes $5·65 billion.

To cover the deficit in the future it is estimated that an increase in the volume of exports as compared with 1938 of 56%, or a contraction in imports of 36%, would be required. The discussion of the ways and means of achieving a balance centres naturally largely on the trading position of the U.S.A. The possibility of Europe materially reducing her deficit with the U.S.A. by means of surplus with other countries is considered "extraordinarily unpromising because of the serious deterioration in the trade balances of non-European countries with the U.S.," and, in fact, in the period considered, direct exports to the U.S. showed a declining tendency. This decline is attributed to the relative rise in European export prices, and the conclusion reached —perhaps the major conclusion in the whole report—"that a cure of European currency inflation thus seems to be a prerequisite of any export programme designed to diminish Europe's adverse balance with the United States." But even if this cure is affected" it would be optimistic to expect that increased exports to the U.S. could provide a full answer to the question." From this it is argued that Europe must contract her imports and that "an expansion in the production of heavy industries in the order of $2,000 million (in pre-war prices)" will be needed.

The last part of the survey deals with the problem of European Reconstruction under three headings, inflation, intra-European trade and production. The inflation chapter covers familiar ground firmly and sensibly; the section on intra-European trade, reaches perhaps a little gropingly and reluctantly the rather obvious conclusion that European bilateral agreements require to be rendered more flexible; the chapter on production ends the Survey with the relatively optimistic finding "that the prospects of attaining the existing production targets for the early 1950s do not appear unpromising, provided that intra-European trade and credit arrangements can be developed sufficiently to permit a more rational utilization of European resources, and that financial

difficulties will not force an interruption in the flow of oversea supplies in the intervening period."

The whole volume has been compiled with great care, and its authors, by picking up the story where the League left it off and linking the past to current events, have thrown the picture into its proper perspective. There are naturally some points on which the reader would be glad of fuller explanation or about which he may feel some doubt. There are not many that have struck me, but the following are possibly worth mentioning. It would have facilitated the work of those anxious to follow later developments if the exact manner in which the industrial and building indices have been combined had been explained in more detail. The European coal situation after the First World War was actually rather more favourable than is suggested, as lignite production—especially in Germany—increased rapidly. Recent trade figures are generally compared with 1938. This is probably the best single year that could have been selected; but it is not wholly satisfactory especially as the U.S. imports were one third lower than in 1937. The U.K. budget deficit in 1947 is given as zero. No doubt on some definition of receipts and outgoings this can be justified. But the figure of £537 million given in the British White Paper on National Income is probably more significant. These are, however, minor points and there is no reason to doubt that the general picture given is not only illuminating but accurate.

With the second volume mentioned above I shall deal much more briefly. It is accurately described as an " inventaire " and is presumably intended as a work of reference. The subjects covered are area and population, war losses, agricultural production, power, industrial production, transport, prices and money, public finance, wages and employment, trade and balances of payment. Unlike the U.N. publication it gives figures for individual countries as well as for groups, which accounts for its enormous length. Most of the basic tables show totals for the " Sixteen States," Germany, Eastern Europe, the U.S.S.R. and for various other less important groupings, and this break down is very valuable. Secondary sources are generally used and as a rule the same source has been used for each country for all the years given and frequently different sources for different countries. As a result the totals differ somewhat from those contained in any of the sources. This, though no doubt often unavoidable, somewhat detracts from the value of the volume as a work of reference, as differences in international sources—errors apart—are, as a rule, due to small differences in definition. But

it does not have any serious influence on the general picture, and so far as I can judge the tables have, for the most part, been carefully compiled.

I am, however, puzzled by some of the demographic figures. War losses are given at 30,760,000 persons, of whom the U.S.S.R. accounts for 17 million. The International Committee for the Study of European Questions gives a total for the U.S.S.R. of 7 million. Can the alleged 17 million be a typing slip which has been carried into the total? The table setting out these war losses (p. 39) contains an obvious misprint of 34,750,000 for 24,750,000 in another place, and in an earlier chapter and also in the introduction, the birth and death rates seem to have been multiplied by ten, an error which might inspire the casual reader with unjustified horror.

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WE record with the greatest regret the death of Mr. Evan Durbin, Parliamentary Secretary to the Ministry of Works and formerly on the Staff of the London School of Economics. An obituary notice will appear in a forthcoming issue.

THERE has recently been established in the University of Delhi a post-graduate School of Economics, which is intended to function as a centre of advanced teaching and research. The first Director of the School is Dr. V. K. R. V. Rao, Professor of Economics in the University, and author of a well-known work on the National Income of India, who has already started work with a small staff. It is hoped to attract financial support both from Government and private sources; but, in the words used by Sir Maurice Gwyer, the Vice-Chancellor, in commending the scheme, the School will "in no circumstances surrender any part of its independence or allow itself to become identified with any particular school of economic thought or economic propaganda, still less any Government or trade organisation." It will doubtless be some time before the School can grow to full maturity; but it seems likely to be destined to play a most useful part in the study and handling of India's immense economic problems.

RECENT PERIODICALS AND NEW BOOKS

Journal of the Royal Statistical Society.

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BULLETIN NO. 129. *Expenses and Profits of Limited Price Variety Stores in 1947 :* M. P. BROWN.

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United States Flour Consumption : W. O. JONES. *Agriculture and History :* R. C. LOEHR. *The Objectives and Methods of Agricultural Economics :* B. W. ALLIN. *Agricultural Economics and History :* W. H. GLOVER and T. SALOUTOS.

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NOVEMBER–DECEMBER 1947. *La France Économique de 1939 à 1946 (suite et fin). La production agricole :* P. FROMONT. *La production industrielle :* S. BERACHA. *L'organisation professionnelle :* G. LIET-VEAUX. *Les échanges intérieurs :* A. PIATIER. *La balance des paiements :* R. JOLIVOT. *Le commerce extérieur :* J. WEILLER. *La législation commerciale interne :* A. TUNC. *La politique commerciale et les accords commerciaux :* J. NAUDIN. *L'évolution des transports :* J. MOTHES. *La marine marchande et les ports :* J. MARCHEGAY. *L'union française :* J. PELLIER. *L'évolution des salaires :* J. LEHOULIER. *Le mouvement ouvrier et la politique syndicale :* G. DEHOVE. *La législation sociale :* H. BARTOLI. *Assurance sociale et sécurité sociale :* E. ANTONELLI. *Le ravitaillement en France :* A. HEILBRONNER. *Habitations et logement :* M. AUCUY.

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JULY–SEPTEMBER 1948. *Unions économiques et alignement des systèmes fiscaux :* H. LAUFENBURGER. *La psychologie du contribuable devant l'impôt :* P. -L. REYNAUD. *Le problème financier de la Grèce :* P. B. DERTILIS. *La notion fiscale de plus-value et d'enrichissement :* D. BOMPIS.

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P. CHAMLEY. *La consommation incompressible :* Y. MAINGUY. *À la recherche d'un optimum d'investissement :* J. MARCZEWSKI. *Limites à l'absorption des crédits extérieurs :* F. SELLIER.

Revue de l'Institut de Sociologie. (Publication resumed after eight years.)

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APRIL–JUNE 1948. *Unité et Disparité sociales :* G. DE LEENER. *La Pension des Travailleurs :* L. FRANÇOIS. *Chronique du Mouvement scientifique :* D. WARNOTTE.

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AUGUST 1948. *Les finances publiques belges :* A. -E. JANSSEN. *Les finances privées :* C. ROGER. *Le mouvement social en 1947 :* A. WORONOFF. *La situation inquiétante de l'industrie houillère belge :* C. D. DE LESPAUL. *La métallurgie en 1947 :* R. DE STRYCKER. *La construction :* A. VASANNE. *L'évolution de l'agriculture belge en 1947 :* K. PINXTEN. *La situation du commerce extérieur en 1947 et au début de 1948 :* J. JUSSIANT. *Prix, consommation, balance et revenus :* F. BAUDHUIN. *La situation économique du Congo belge :* M. MASOIN.

Kyklos.

VOL. 2, NO. 2, 1948. *Notes on the Theory of Investment :* L. R. KLEIN. *Schwedische Finanztheorie und Finanzpolitik :* C. WELINDER. *Capital et revenu dans les relations économiques internationales :* J. WEILLER. *Konsumtivzins und Minderschätzung künftiger Bedürfnisse :* E. PREISER.

De Economist.

JUNE, 1948. *Open of teruggedrongen inflatie in West-Europa :* H. W. J. A. VREDEGOOR. Price-regulation and rationing are desirable in war, but they are regarded as temporary measures, and there is a desire to return to freedom as soon as possible. There is an impression in America that these measures are assuming a more permanent character in Europe, as a result of the emergence of collectivist ideas. Röpke has recently been expressing the view that the immediate abolition of controls is necessary and that, in particular, it would lead to a restoration of production. German economy, according to Röpke, is in a state of pernicious anæmia : what is needed is the restoration of an essentially free-market economy. The writer argues, as against Röpke, that the abolition of control would make the position worse. The cause of the stagnation of German production is to be found in the completeexhaustion of reserves of raw material and food, which cannot be overcome without extensive foreign credits. Lessons are drawn from the experience of Holland where conditions towards the close of the War were more chaotic than in Germany. The effects of removing controls forthwith are discussed at length, and it is argued that this would lead in Germany to sharp inflation and would damage the position of the working class. The writer agrees with Röpke on the desirability of removing restrictions, but it cannot be done now. *Over de toepassing van een systeem van variabele compensatieverhoudingen in het bilateraal handels—en betalingsverkeer :* W. TH. VOGELAAR. In connection with the importance of acquiring new markets and retaining old markets, the writer surveys

the difficulties confronting the conduct of foreign trade to-day, with special reference to the particular problems of Holland. The agreement between Holland and Austria, of December 13, 1947, is cited. As an example of the development of new markets, the problem of the relations between Holland and Greece is discussed as a hypothetical case.

JULY–AUGUST 1948. *Het streven naar een hogere levensstandaard van de economische onontwikkelde gebieden :* W. BRAND. Importance attaches to the efforts, especially in the after-war years, to raise the standard of life of backward peoples. The tendency has both a political and an economic character. Economic development is defined as " raising the standard of life, per head, of the population, measured in an increasing number of goods and services." It is a dynamic process; rising real incomes lead to increased effective demand for consumption and capital goods. The poverty of economically backward countries has its cause in low labour productivity, connected with primitive agricultural technique and an undeveloped transport system. This leads to a superfluous, underfed, listless labour reserve. Sceptics consider this economic backwardness inherent in the qualities of the people, geographic situation, climatic factors, etc. Those more idealistically minded consider a raising of backward lands possible. The question of breaking the vicious circle is as much a question of instruction, organisation and politics as of economy and technique. What is needed is the creation of an " efficient economic climate," and this calls for the initiative of a strong central authority. The most difficult question for backward lands is that of agriculture. There are great opportunities for improvement in China, India and South America. What the State might do is considered in detail. The two great obstacles to development are : (*a*) the absence of capital, and (*b*) the absence of a trained labour force. The article concludes with a discussion of the effects of the development of backward countries on the economy of more developed countries. *Aanteekeningen betreffende de positie van het pond sterling. I.* G. A. KESSLER. The first instalment of a detailed history of the Pound Sterling in recent years, arranged under the following sections : (i) The Pound before September, 1939 (in fact, beginning in 1925); (ii) the Pound during the War; (iii) development of regulation, resting on " conventions," after the War until August, 1947; (iv) causes leading to the abolition of transferability, August 21, 1947; (v) direct consequences of August 21, 1947.

SEPTEMBER 1948. *Professor Dr. Nico Jacob Polak :* An editorial obituary notice in honour of Dr. N. J. Polak, who died on the 17th August, 1948. *Het waarde-oordeel in de theoretische economie :* F. HARTOG. A summary of, and a commentary on, a doctoral dissertation by Fred. L. Polak on " value-judgments ". The approach throughout is philosophical. *Aantekeningen betreffende de positie van het pond sterling (II) :* G. A. KESSLER. The second instalment of this article is devoted to " manifestations-of-depreciation " in the Pound Sterling. Special attention is given to causes operative in the international valuta-market. The tendencies to depreciation have made their influence felt in the international goods-market. The " manifestations-of-depreciation " can be regarded as one of the various facets of the universally prevailing dollar-scarcity. The question arises whether the British authorities will have occasion in the near future to go over to an official devaluation of the Pound Sterling. It is argued that under present conditions an official diminution in the value of the Pound would in nearly all respects be to the disadvantage of the position of the United Kingdom. Reasons for this view are given at length, and the conclusion is drawn that under present conditions a devaluation of the Pound Sterling is improbable.

Schweizerische Zeitschrift für Volkswirtschaft und Statistik.

JUNE 1948. *Die Konventionen von Bretton Woods und die schweizerische Währungspolitik :* T. KELLER. *Die Welthandels-Charta von Havanna :* W. STUCKI. *De la Conférence des Seize à l'Organisation de Coopération économique :* G. BAUER.

AUGUST 1948. *Die Einkommensteuer in Bundesstaaten :* W. BICKEL. *Réforme des finances fédérales et marché financier :* C. LASSERRE. *Sparen und Investieren :* H. G. BIERI. *The Investment Gap :* L. A. HAHN.

Aussenwirtschaft.

SEPTEMBER 1948. *Die Aussenhandelspolitik des schweizerischen Bundesstaates 1848–1948 :* A. BOSSHARDT. *Der Kampf um die Donau :* J. F. KÖVÉR. *Wirtschaftsplan und Aussenhandel :* R. SCHNEIDER.

Giornale Degli Economisti.

MARCH–APRIL 1948. *Il concetto di "residuo" in Pareto :* F. BURZIO. A defence, against Croce, of the basis and usefulness of Pareto's concept "residuals," together with a clarification of the idea and a comparison with modern scientific principles. It may appear desirable to widen Pareto's proposition that there is a tendency to substitute beliefs which can be experimentally verified for those which cannot to a tendency to substitute those beliefs which are in harmony with the environment, but the author believes, against the Marxists, that the residuals are themselves a "cause," and have a driving force in themselves. *I problemi di "fondo" della politica creditizia :* A. GAMBINO. The controversy over creation of credit by the banks is solved by stating that the banks, like ordinary people, can only give credit to the extent that it is given them, but that this can lead, as it can with ordinary people, to an expansion of credit out of all proportion to real savings. Hence the importance of a deliberate concerted credit policy for banks arises; left to themselves the result would be a see-saw of expansion and contraction. *I finanziamenti statali alle imprese industriali in relazione alla politica creditizia :* G. STAMMATI. An account of reconstruction aid to industry by the Italian Government. *Determinatezza della funzione dell'ofelimità. Curve storiche e curve dinamiche di domanda :* G. ZACCHERINI. A proof of the determinateness of the utility function given the propositions Pareto laid down, and referring to recent discussion. This is followed by a demonstration of the building of dynamic and historical demand curves from the solution of problems of planning expenditure over a lifetime or more. *Schema di un metodo statistico per lo studio dei problemi della nutrizione :* L. BRUNI. A method for arriving at (*a*) an index of the average value of the nutritive elements (calories, proteins, etc.) contained in a certain diet or particular food, and (*b*) of the balance between these various elements. This is done by adopting as a basis the quantities and proportion of the different elements necessary for three dietary levels, minimum, marginal and optimum (the last two based on Bacharach and Drummond), and valuing each item in the observed diet according to its actual position compared with what it would have in one of these three levels. Estimation, for instance, can then be made of the economicalness of different foods by their contribution to a certain diet in terms of money cost and of land.

MAY–JUNE 1948. *Osservazioni intorno a una teoria della pianificazione democratica :* G. DI NARDI. A criticism of Landauer's "Theory of National Economic Planning." It is argued that economic stability is a vain hope. *Un approccio alla teoria delle decisioni di comitato :* DUNCAN BLACK. An attempt to determine the result of voting by a committee in the same way that economic theory determines the price formed by a market, though, of course, with appropriate differences. The analysis is most successful where an order in which the motions before the committee can be placed along an axis of a graph exists, such that the preferences between motions of each member, represented by the length of ordinates from that axis, form a smooth curve when the motions are plotted in that same order for each member. Such a grouping yields a definite result, and the author suggests that it is possible to form a judgement on the equity of any particular system of voting according to whether it leads to this result, considered as an optimum, being reached. In

other cases the outcome will depend on the order in which motions are put, as well as on the system of voting. *La matematica per economisti di Allen :* E. ZACCAGNINI. *La costruzione del mercato in generenell'economia pura :* A. MACCHIORO. A study, among other things, of the relation between the general and partial equilibrium approaches. *Di una formula inadeguata per il benessere sociale :* M. DE LUCA. The formula in question is the suggestion of Hotelling and Lerner that an approach to greater social justice could be made by selling the product of decreasing cost industries at marginal cost and meeting fixed costs by taxes on property owners. The author holds that Coase's objections about mal-distribution of resources, and the effect of the taxes, lose much of their weight when large numbers of consumers lack the most elementary necessaries of life. He himself maintains, however, firstly that the formula is inadequate in this situation because it deals only with goods produced at decreasing cost, and secondly that it is likely to lose its force through increases in the prices of goods produced at constant or increasing cost. *Considerazioni sulla probabile entità delle riserve auree ufficiali dell'U.R.S.S. :* L. CHIAVARELLI. *Incompatibilità fra due leggi di economia aziendale :* C. BUONOCORE. The principles that the marginal productivity of each factor employed should be made equal, and that the output of the firm should be such that marginal and average cost are equal, are only compatible in rare cases.

Review of the Economic Conditions in Italy.

JULY 1948. *"Fundamental Disequilibrium" in Exchange Rates :* C. BRESCIANI TURRONI. *Italy's Economic Policy within the Framework of European Cooperation :* F. VITO.

SEPTEMBER 1948. *Prospects of Public Finance in Italy :* B. GRIZIOTTI.

Italian Economic Survey.

JULY–AUGUST 1948. *From Stagnation to Recovery.*

Banca Nazionale del Lavoro Quarterly Review.

JULY 1948. *Apparent and Real Causes of American Prosperity :* C. GINI. *Some Aspects of the Franco-Italian Customs Union in regard to the Gradual Manner of its Achievement :* U. GRAZZI. *Exchange Rate Structure and Price Levels in Italy ; 1947–48 :* B. BROVEDANI. *The Banking Year 1947 in Italy :* M. MANCINI. *Distribution of Shareholders among Italian Joint Stock Companies :* E. RIENZI.

Critica Economica.

MAY–JUNE 1948. *Gli studi del mercato e le ricerche economiche :* G. TAGLIACARNE. *Sugli equivoci che corrono intorno all'applicazione dell'E.R.P. :* L. FEDERICI.

L'Industria.

NO. 2, 1948. *Il reddito nazionale :* A. C. PIGOU. *Modelli stocastici in econometrica :* F. BRAMBILLA. *Aspetti ignoti e poco noti del piano Marshall :* F. DI FENIZIO. *Considerazioni sulla concentrazione industriale :* P. BATTARA.

Moneda y Crédito.

MARCH 1948. *La fundación del Banco de Amsterdam (1609) y la Banca de Sevilla :* J. A. RUBIO. *El mercado de crédito en Francia, en 1946 :* A. V. PARDO. *Preocupaciones y sugestiones ferroviarias :* C. BOTIN Y POLANCO. *El lujo y el Fisco. Historia de un impuesto :* M. P. MARCOS. *Un aspecto social de los precios :* J. MARIAS.

Revista de Ciencia Aplicada.

JULY–SEPTEMBER 1948. *Estructuración económica de las cuencas hidráulicas :* J. DE ARESPACOCHAGA Y FELIPE.

El Trimestre Económico.

APRIL–JUNE 1948. *El bimetalismo. Revision de su causa :* G. BERNÁCER. *Régimen financiero del Seguro Social :* M. G. CRUZ. *La moneda brasileña :* D. T. VIEIRA. *La teoría del tipo de cambio y la devaluación belga :* R. TRIFFIN.

Økonomi og Politik.

JANUARY–MARCH 1948. *Krigsskadeserstatningsleverancerne fra de vesttyske zoner. Indonesien :* S. HENNINGSEN. *Finlands ekonomiska position efter kriget :* K. WARIS. *„De forenede Nationer" I 1947 :* E. RESKE-NIELSEN. *Den internationale økonomiske situation. Den økonomiske situation i Danmark. Institutet for Historie og Samfundsøkonomi i 1947. Politisk Kronik.*

Europa-Archiv.

JUNE–JULY 1948. *Das deutsche Bevölkerungsproblem in europäischer Sicht :* W. BAUER. *Die Beschäftigungslage in Deutschland :* F. RUPP. *Die Industriestruktur in der sowjetischen Besatzungszone Deutschlands.*

AUGUST 1948. *Das politische Gesicht Deutschlands Die Welthandels-Charta (Fortsetzung). Das europäische Bevölkerungsproblem. Das internationale Weizenabkommen. Schwedische Literatur des zwansigsten Jahrhunderts :* F. TUTENBERG.

SEPTEMBER 1948. *Planung und Aktion in der westeuropäischen Zusammenarbeit. Die Justizreform in der Sowjetzone Deutschlands :* W. ABENDROTH. *Die Welthandels-Charta. Internationaler Währungsfoends und Weltbank. Das europäische Bevölkerungsproblem. Das Abkommen über wirtschaftliche Zusammenarbeit. Der Film in Vergangenheit und Gegenwart.*

Monatsberichte Des Österreichischen Institutes Für Wirtschaftsforschung.

XXI. JAHRGANG, HEFT NO. 5. *Reports on Economic Conditions in Austria.*

XXI. JAHRGANG, HEFT NO. 6. *Reports on Economic Conditions in Austria.*

Ekonomisk Tidskrift.

XLIX, NO. 4, DECEMBER 1947. *Business and Politics : Economic Cycles and Political Elections in U.S.A. 1868–1944 :* PROFESSOR JOHAN ÅKERMAN. A statistical analysis of the relation between business conditions and presidential election results in U.S.A. in the period 1868–1944. As an indicator of business conditions in each Presidential election year, the author takes the relation between the average of the monthly index of stock exchange prices in July–October and the corresponding average for March–June. He also has an index of agricultural prospects, *e.g.*, the relation between farm income in the Presidential year and in the preceding year. The political variable finds statistical expression in the total number of votes cast for the party in power relative to the total number of votes cast for the other parties. The economic and political indices are plotted for twenty Presidential election years; and a strong positive correlation is found between the (upward or downward) cyclical trend in the months before the election and the ruling party's popular vote relative to that of other parties. It is asserted that the loss of an election is in most cases associated with slump conditions just before the election. Professor Åkerman suggests that after 1890 the course of the business cycle can be satisfactorily explained only by taking into account the political and institutional framework. *Some Reflection on the Construction of the Cost of Living Index Number in Sweden :* CARL-ERIK QUENSEL. In Sweden the budget

assumed is that of a family with two children under sixteen years of age. This article argues that the general index should be based on a family with one child under sixteen. Among the main reasons given is that subsidised food prices make a real difference to the existing index. The value of the subsidy is reckoned to be 90 Kr. per index family, but is much smaller than this if it is calculated per household or per wage earner in the population as a whole. If one used an average family with one child for calculating the general quantitative significance of the food subsidies, one would get a more reasonable figure per household. *The Theory of Prices and the Price Policy of Co-operative Societies:* ARNLODS P. AIZSILNIEKS. This is a continuation of a previous article. The author seeks to discover the most advantageous price policy for a co-operative society under monopoloid, "polypolistic" competition and oligopoloid conditions. Generalising, the author submits two practical principles: (1) So long as the co-operative society operates under conditions of falling average costs, it pays the members if the society reduces the day's price as much as possible and declares a low dividend. In this way what the members save per unit of goods purchased is maximised. If the society is under "polypolistic" competition or oligopoloid conditions, it should couple its price reductions with propaganda and advertisement in order to gain new members, increase its turnover and so be able again to reduce prices. (2) As soon as the society has reached a turnover which entails rising average costs, it pays the members to have a higher day's price and a higher dividend. In these circumstances the society should concentrate on consolidating its own membership and stabilising its position by building up reserves etc. It is to the interest of co-operative societies to lower prices in a slump and raise prices in a boom, whereas the State is concerned with doing the opposite; for this reason the author concludes that it is not easy to formulate a general price policy which will suit the interests of both co-operative societies and the State. *Stone's System of Social Accounting:* INGVAR OHLSSON. A review of J. R. N. Stone's "Definition and Measurement of the National Income and Related Totals" in the Report of the Sub-Committee on National Income Statistics (League of Nations, Committee of Statistical Experts, 1946).

L. No. 1, MARCH 1948. *Extension of Income Statistics:* CARL-ERIK QUENSEL. The wealth of data on distribution of income obtained by sample in the Swedish Census of 1945 leads the author to consider a reform of the annual statistics of income. He proposes a 5–10% sample each year to include items such as occupation, local authority, year of birth, sex and civil status, size of family, income from different sources. An outstanding problem is presented by changes in income distribution as between different age groups; and this could be illuminated by the new statistics here proposed. Other advantages of such figures are pointed out, and changes are suggested in the presentation of the original material. *The Inflationary Gap:* RALPH TURVEY. An article by a young Englishman who was awarded a Scholarship by the Swedish Institute for study in Sweden. Having listed the items comprising Total Supply and Total Demand, he arrives at an equation for the Inflationary Gap as the excess of Exports plus Gross Investment plus Government Income-creating Expenditure over Imports plus Gross Savings plus Taxation reducing Income. This excess is hidden *ex post* by price increases, stock reductions etc. A distinction is drawn between the kind of inflation which is cumulative and that which is not. The latter occurs when there are "involuntary" savings due to rigid price control and rationing; but where prices are free to move, there is a cumulative process. The significance of this dynamic element entering into Total Demand is illustrated in an arithmetic model of a process covering three "periods." *Business and Politics: A Comment by* ERIK RUIST and JAN WALLANDER: DISCUSSION. A criticism of Professor Åkerman's thesis. Åkerman had concluded that a defeat of the party in power in U.S.A. was associated with a slump *or* a worsening of business conditions before the election. The critics

point out that a "worsening of business conditions" as measured by Åkerman's index gives no definite indication of any particular phase of the trade cycle. They also doubt the validity of the curves used to represent changes in the economic and political indices over a long period. One can draw inferences from the figures for each election, taken as an isolated phenomenon, but not from imaginary "changes" from one election to another. Too much weight must not be attached to the high correlation coefficient. *Rejoinder by Professor Johan Åkerman.* It is admitted that a decline in business conditions gives information about the degree of change and not about the level of activity; but in most cases a political defeat is associated with a cyclical down-swing. Åkerman denies that a point diagram would have been better than the graph which he used, for he was interested in the functional relationship *over different periods of time. The Cost of Living Index Number. A Comment by Gustaf Berglund and Erland V. Hofsten.* The authors, writing from the Ministry responsible for the index number, take up Quensel's point that there ought to be a special index to reflect the circumstances of families with children. They argue that this purpose is already served by the Riksbank's consumption price index. In reply to Quensel's argument about direct taxes, the conclusion is reached that it would be better to drop taxes out of the index. Sweden Denmark and Finland are the only countries which include an item for direct taxes in their cost-of-living index number; the authors think it is time Sweden abandoned this practice. *Rejoinder by Carl-Erik Quensel.* If his original article leads the authorities to reflect on the unrepresentative character of the average family of two children, its object will have been achieved. He repeats that it is essential to devise a less arbitrary method of calculating the tax item in the budget. Whether the index including taxes or excluding taxes should be called the main index number is largely a political matter.

L. No. 2, June 1948. *The Optimal Employment of Labour:* Ragnar Frisch. In a given sector of the economy, labour has an *internal* and an *external* marginal product. The internal marginal product is the difference made to the product when the quantity of labour in the given sector is increased, with labour in other sectors remaining constant. The external marginal product is the difference made to the product when labour in the given sector is held constant while labour in other sectors is increased. Under free competition wages tend to equal the *internal* marginal product. Market equilibrium is found at the point where the marginal disutility of labour equals the utility (in the form of consumers' goods or saving) accruing to the workers from the internal marginal product, after deducting marginal tax (*i.e.*, the increase in direct tax associated with an additional unit of labour employed). However, the optimal point is found where there is equality between the marginal disutility of labour and the utility yielded by that amount of labour with respect both to the internal and *external* marginal product and without deducting marginal tax. The market equilibrium point will normally give a *lower* volume of employment than the optimal point. The system has an inherent tendency to keep labour intake at a lower level than that which would maximise net gain for the community. Frisch thinks this is a fundamental fact to be taken into account in any serious discussion of the current "manpower shortage." He goes on to consider in abstract terms how labour intake can be influenced in the direction of the optimum and what taxation and subsidy policy would be necessary to compensate the individual firms for the higher wages entailed by the process. He believes that radical measures may be required if the problem is to be solved within a democratic society. *A Note on the Inflationary Gap and Equilibrium Constructions:* Bent Hansen. An attempt to show the uses and limitations of the Keynesian equilibrium construction in analysing inflationary pressure. Following a line of thought characteristic of Davidson and Lindahl, the author emphasises the distinction between a movement of the price level due to a change in productivity and a movement due to monetary inflation.

(A short fall of purchasing power and an inflationary gap may exist at the same time, cf. U.S.A. 1926–29.) The productivity effect is non-cumulative, while the inflationary effect is cumulative. The total excess of purchasing power is made up of both; and the inflationary gap must therefore be defined as the cumulative part of the total excess of purchasing power. Since it is the entire rise in prices which is relevant in wage negotiations, it is of the utmost practical importance to distinguish between the inflationary gap and the non-cumulative excess of purchasing power. The author concludes by instancing cases where an analysis wholly in terms of the Keynesian method would not be fruitful, and he suggests a more intensive development of period analysis. *Planning and Research as an Important Means of Formulating Policy for the State Railways :* ARNE SJÖBERG. A survey of some of the problems now facing the Swedish State Railways, *e.g.*, competition of road vehicles and the changing structure of Swedish industry. The article lists a series of research projects which would help the Railways to adjust their policy to changed circumstances, and holds up as a model the activities of Railway Research Organisations in U.S.A. and Great Britain. *A Note on Keynes' General Theory :* KARL HENRIK BORCH. A defence of Keynes against Professor Palander's argument that there is a mistake in the algebra in Chapter 21 of *The General Theory*. Borch's point is that the elasticities *le* and *lo* in Chapter 21 are not identical with the elasticities expressed by the same symbols in Chapter 20. The note shows what modifications are necessary to take this into account.

Skandinaviska Banken Aktiebolag.

OCTOBER 1948. *The Importance of the Rate of Interest :* PER JACOBSSON. *Distribution of the Swedish Stock of Bonds :* P. BRUNDELL. *Visible Saving. Sugar Beet Breeding :* J. RASMUSSON.

Ekonomiska Samfundets Tidskrift.

VOL. 1, NO. 2. *Riktig och oriktig prispolitik :* C. E. OLIN. *Vårt lantbruks framtidsmål :* H. E. PIPPING. *Prisnivån och valutakurserna :* R. BÅRLUND.

NEW BOOKS.

British.

ALDRED (G. A.). Bakunin's Writings. Bombay : Libertarian Book House, 1948. 7″. Pp. vi + 107. Rs. 2.

[This is a collection of essays by Michael Bakunin, all of the period 1867–71. There is a short foreword and four appendices dealing with different aspects of the life, thought, and writings of Bakunin and of his relations to Marx.]

ALLEN (G. C.). Economic Thought and Industrial Policy. London : H. K. Lewis, 1948. 8½″. Pp. 18. 2*s.* 6*d.*

[Prof. Allen's Inaugural Lecture starts by looking back to the history of the relationship between the State and industry, the early growth of the doctrines of liberalism and *laissez-faire* and their apparent decline during the 'thirties. He then looks forward to the future of such relations and discusses the significance of ideas of " full employment " and a better distribution of income. Next he considers the implications of monopoly and the arguments for nationalisation. Finally he comes to the possibilities of a middle road and the reconciliation of a planned frame-work with the use of a pricing system and private enterprise in a part of the field of economic activity. He recognises the difficulties, but is far less dogmatic than many recent writers as to the impossibility of combining some measure of consumers' sovereignty exercised through a pricing system with a measure of centralised planning expressed in targets and priorities. It is, perhaps, a little surprising that he does not go on to ask whether there are particular fields (such as investment or foreign trade) in which planning should be pushed further than in the rest of the economy. He ends with a question

rather than an answer: Is it possible to combine planning with "the free and miscellaneous movements of the mind and will, without which, if the experience of the past is any guide, progress in this country—and not only material progress—is in jeopardy."]

Annual Market Review, 1947. Bombay: Premchand Roychand, 1948. 10". Pp. 88.

[This review of 1947 deals as usual with the general economic and financial trends in India and their world background and with the markets for the main Indian commodities. It contains useful statistical tables covering these and kindred matters.]

ASHTON (T. S.). The Industrial Revolution, 1760–1830. London: Oxford University Press, 1948. 6½". Pp. 167. 5*s*.

[To be reviewed.]

BAUER (P. T.). The Rubber Industry. A study in competition and monopoly. London: London School of Economics and Political Science and Longmans, Green, 1948. 8½". Pp. xiii + 404. 25*s*.

[To be reviewed.]

BEVERIDGE (LORD). Voluntary Action. A report on methods of social advance. London: Allen and Unwin, 1948. 8½". Pp. 420. 16*s*.

[To be reviewed.]

CHANDRASEKHAR (S.). Census and Statistics in India. Annamalainagar, India: Annamalai University, 1948. 9½". Pp. 32.

[An account of the methods of the collection of the population census of India. It goes into considerable detail regarding the processes of collection, but hardly touches the equally fundamental question of the accuracy, reliability and possibilities of adjustment of the material collected. This particularly affects the data relating to age. The almost complete unreliability of the vital statistics, especially the birth statistics, combined with uncertainties of age and difficulties of smoothing the age-distribution curve, make the calculation of birth and survival rates exceedingly uncertain. The author is a little too concerned with political vilification of British statisticians in India and concentrates too little on these major problems of getting Indian statistics right. In the past India has had an incomparably cheap census. Can she now afford to pay the necessary price for good and reliable figures? The author seems to doubt it.]

THE CHARTERED INSTITUTE OF SECRETARIES. Proceedings, Royal Charter, By-Laws, Examination Rules, List of Members, 1947–48. London: Chartered Institute of Secretaries, 1948. 8½". Pp. 632.

[This year-book contains the full list of members of the Institute as well as its branches, its by-laws and the regulations for its examinations.]

CHESTER (D. N.). The Nationalised Industries. A statutory analysis. London: Institute of Public Administration, 1948. 8½". Pp. 47. 2*s*. 6*d*.

[A most valuable analysis of the forms of organisation and the extent of ministerial, and thus parliamentary, control of the various nationalised industries. Mr. Chester takes in turn each of the main functions or responsibilities—appointment of members of the controlling body, qualifications, disqualifications, terms for appointment, salaries, area boards, advisory or consumers, ministerial control, finance, accounts, annual reports. He then shows how each of the various nationalised industries stands under the particular head. There is a most useful bibliography, list of acts and documents, and a chronology of the legislation.]

COLE (G. D. H.). National Coal Board. London: Fabian Society and Victor Gollancz, 1948. 8". Pp. 45. 2*s*.

[Prof. Cole is primarily concerned here with the question of who should run the coal industry: a board of essentially independent persons chosen for their administrative or technical capacities, or a board that is syndicalist in character and representative of workers and technicians or of the trade unions in the industry. He is in favour of the former—a board appointed by the Minister on

grounds of personal qualifications; it should include persons drawn from trade unions of the coal industry and of industry generally, but they should act in a personal capacity and not as delegates of their unions, nor should they be pledged to follow trade-union instructions. There should, however, be supervisory boards on which trade unions and professional associations would be represented. The trade unions in the industry itself should retain their independent responsibilities to advance the workers' interest in all negotiations. There should be more effective opportunity for parliamentary criticism and an annual report to be debated by Parliament.]

DAS (NABAGOPAL). Unemployment, Full Employment and India. Bombay: Hind Kitabs, 1948. 8″. Pp. 87. Rs. 2·8.

[A new edition of a pamphlet first published in 1946, considerably rewritten and enlarged. The pamphlet retains, however, in essence the character of something written before Indian independence and almost all the statistical material is on an all-India basis. The author, though he sees many difficulties and the prior importance of all possible action to increase general productivity, is nevertheless of the opinion that a full-employment policy for India is both practicable and desirable.]

DEMPSEY (B. W.). Interest and Usury. London: Dennis Dobson, 1948. 8½″. Pp. x + 233. 12*s*. 6*d*.

[To be reviewed.]

DESHMUKH (SIR CHINTAMAN D.). Central Banking in India: a retrospect. Poona: Gokhale Institute of Politics and Economics, 1948. 8½″. Pp. 33. Re. 1-8-0.

[This little pamphlet, reprinting the Kale Memorial Lecture given by the Governor of the Reserve Bank of India, is well worth the trouble of obtaining and reading. It contains in thirty-three small pages more of the financial, political and personal history of Indian central banking than many large tomes. He traces first the foundation of the Reserve Bank and the various political pitfalls that postponed it so long. An amusing section deals with the politics of Sir Chintaman Deshmukh's own appointment to the Reserve Bank and the fluctuating relations with the Government of India.]

FRANKLIN (N. N.). Economics in South Africa. Cape Town: Oxford University Press (London: Geoffrey Cumberlege), 1948. 7″. Pp. 253. 15*s*.

[To be reviewed.]

FUSSELL (G. E.). From Tolpuddle to T.U.C. Slough: Windsor Press, 1948. 7″. Pp. 148. 6*s*. 6*d*.

[To be reviewed.]

GADGIL (D. R.). Economic Effects of Irrigation. Report of a survey of the direct and indirect benefits of the Godavari and Pravara Canals. Poona: Gokhale Institute of Politics and Economics, 1948. 8½″. Pp. viii + 183. 16*s*.

[This is the report of a survey of the direct and indirect benefits of the Godavari and Pravara canals, submitted to the Government of Bombay in 1942. An attempt is made to estimate the value of the gross produce due partly to the canals, partly to the private investment which their existence made profitable. In very round figures, the return on the public and private investment on the average of 1939–40 was Rs. 35 lakhs on a total investment of about Rs. 300 lakhs.]

GLASS (RUTH). The Social Background of a Plan. A study of Middlesbrough. London: Routledge & Kegan Paul, 1948. 8½″. Pp. xiv + 268. 42*s*.

[To be reviewed.]

The Incorporated Accountants' Year Book, 1948. London: Society of Incorporated Accountants and Auditors, 1948. 7″. Pp. 746.

[This includes a full list of members (and firms where appropriate) and a topographical list of members, as well as the usual information about officers, by-laws and examinations.]

KUCZYNSKI (R. R.). A Demographic Survey of the British Colonial Empire. Vol. I. West Africa. London: Oxford University Press (Royal Institute of International Affairs), 1948. 9½". Pp. xiii + 821. 75*s*.

[To be reviewed.]

LALWANI (KASTUR CHAND). Indian Business. Vol. I. Aspects of Organisation and Finance. Calcutta: A. Mukherjee, 1948. 9". Pp. xvi + 443 + xxvi.

[The author, a Lecturer in Calcutta University and formerly Professor of Business Organisation in the College of Commerce at Poona, has set out to fill a gap in the economic literature of India. Business organisation has been taught from British or American text-books quite inapplicable to Indian conditions. His book aims to analyse industrial, commercial and financial organisation in terms of Indian examples and to describe the present Indian organisation in each of these respects. The first part discusses forms of organisation, starting from the simplest and going on to the more complex forms of public companies, of combination and of co-operative enterprises. The second part deals with organisation of home and foreign trade. The third part with corporation and trading finance. This should be a useful text-book as well as an addition to the literature of the subject.]

MCEACHERN (R. A.). Putting your Dollars to Work. London and Toronto: Oxford University Press, 1948. 8". Pp. xii + 347. $3.00.

[A popular book on how to buy bonds and stocks safely and profitably.]

Mortgage Lending in Canada, a factual summary, 1947. Ottawa: Central Mortgage and Housing Corporation, Economic Research Division, 1948. 9½". Pp. 68.

[This is the first of a projected series of annual reports by the Canadian Central Mortgage and Housing Corporation. As such it is the first attempt to provide information about real estate financing in Canada. In the year 1947 the gross total of mortgage loans approved was estimated at $258 million; after allowing for cancellations and adjustments this was reduced to $224 million; the actual disbursements on mortgage loan account were $205 million. Of the $258 million, the Life Insurance Companies provided $180 million and Loan Companies $51 million. The total of loans outstanding reached a peak in 1931; it had fallen by 18% by 1939 and during the war years was reduced by another 15%. Since 1945 there has again been a substantial increase in the total. Quite apart from mortgage lending, this pamphlet contains a great deal of incidental information about the finance of house-building in Canada.]

MUNSHI (M. C.). University Education and Business Management. Bombay: Hind Kitabs, 1948. 8½". Pp. 59. Rs. 2.

[This pamphlet, based on talks broadcast in India, is concerned with the problem of the professional and technical training of Indians entering industry. It surveys in considerable detail the recent trends in Britain and the U.S.A. and emphasises the increased recognition of the need for specialised training for business and of the contribution which universities should make to this. What it does not, perhaps, sufficiently stress is the difficulties of finding teaching staff combining the experience of practical affairs and the power to generalise and discern the essential underlying principles, and of attracting the men who possess these rare qualifications to university departments in the face of the high competing salaries that they can expect to command in the business world.]

MYINT (HLA). Theories of Welfare Economics. London: London School of Economics and Political Science and Longmans, Green, 1948. 9". Pp. xiii + 240. 15*s*.

[To be reviewed.]

NAIDU (B. V. NARAYANASWAMY). State and Economic Life. Delhi: University Press, 1947. 10". Pp. 140.

[Eight lectures given in the University of Delhi as Sir Kikabhai Prearchand Readership Lectures. They cover the problems described in the general title of

this volume. After an introductory lecture about the basic theories of *laissez-faire* and intervention, Prof. Naidu goes on in subsequent lectures to discuss agriculture and food supplies, the State and industrial policy, the State in relation to banking currency and exchange, financial policy and, in the last lecture, the future Indian economy. He regards the existing Indian economy as unbalanced in the sense that it is excessively concentrated on agriculture and too dependent on imported manufactures.]

P.E.P. British Trade Unionism. London: P.E.P., 1948. 9½″. Pp. 184. 15*s*.

[To be reviewed.]

Rangnekar (S. B.). Imperfect Competition in International Trade. Bombay and London: Oxford University Press, 1948. 8½″. Pp. xvi + 187. 27*s*.

[To be reviewed.]

Reddiyar (Sri O. P. Ramaswami). Agrarian Reforms and Parity Economy. Fort St. George, Madras: Economic Adviser to the Government of Madras, 1948. 10″. Pp. 39.

[The author argues that a final solution of the agrarian problems of India requires a balance between agricultural and industrial development. He maintains that industrialism is in danger of being pushed too far.]

Rich (E. E.) (Ed.). Hudson's Bay Record Society. X. Part of Dispatch from George Simpson Esq., Governor of Ruperts Land, to the Governor & Committee of the Hudson's Bay Company, London. March 1, 1829. Continued and Completed March 24 and June 5, 1829. With an introduction by W. Stewart Wallace. London: Champlain Society (for the Hudson's Bay Record Society), 1947. 9½″. Pp. lii + 277.

[This is a further volume in the series of the Hudson's Bay Record Society. The volume is described on the title-page as "Part of Dispatch from George Simpson Esq., Governor of Ruperts Land." This is, however, the title of the MS., which is printed here in full; it is a "part" only in the sense that Simpson forwarded his dispatch in three instalments. Its main subject is the Oregon Boundary dispute.]

Röpke (W.). Civitas Humana. A humane order of society. London: William Hodge, 1948. 8½″. Pp. xi + 235. 21*s*.

[To be reviewed.]

Russell (R. S.). Government Bulk Buying. London: Empire Economic Union, 1948. 8½″. Pp. 88. 2*s*. 6*d*.

[A very critical examination of bulk buying by the Government, with detailed reference to each commodity where it prevails. But it is far from clear how the author would prepare to deal with the problems of dollar shortage and difficulties of other particular currencies if freedom of import were generally restored.]

Sayers (R. S.). American Banking System: a sketch. Oxford: Clarendon Press, 1948. 7″. Pp. 130. 7*s*. 6*d*.

[To be reviewed.]

Shaw (A. G. L.) and Gruns (G. R.). The Australian Coal Industry. Melbourne University Press (Cambridge University Press), 1947. 9″. Pp. viii + 197. 17*s*. 6*d*.

[To be reviewed.]

Singh (B.). Population and Food Planning in India. Bombay: Hind Kitabs, 1947. 8½″. Pp. 156. Rs. 4.

[This is a very interesting study of the food problems of India. The author begins by trying to forecast Indian population a decade ahead and its rate of growth. He then tries to establish the minimum calorie and protein requirements, and the amounts of agricultural production or imports necessary to provide for this, with appropriate additions for seed requirements, industrial crops and the

like. He then goes on to consider the prospects of improving Indian agriculture sufficiently to meet these requirements. The prospects are grim, though not hopeless. But in one respect the author fails to grasp his nettle. He does not effectively discuss an Indian population policy; population is something that must be accepted and taken for granted. But if India does what needs to be done for public health, is there a solution, even in terms of imports and exports for a country of 400 million, so densely populated, and with a net reproduction rate on present death rates, if one may generalise from Mysore, of 1·282 ?]

SUMNER (B. H.). Sixth Montague Burton Lecture on International Relations. "Anglo-Russian Relations." University of Leeds, 1948. 8½". Pp. 20. 6*d*.

[The Warden of All Souls' College, in this Montague Burton Lecture, delivered in the University of Leeds, sets Anglo-Russian relations in their longer historical perspective. In particular, he stresses the long conflict of Slavdom and Teutonism and the final triumph of Slavdom in 1945. And he goes on to remind his hearers of the British actions and statements which from 1918 onwards have caused suspicions, often unwarranted but none the less real on that account, in Russian minds. But in the main he is concerned with the underlying Russian philosophies and policies of the present and of the dangers which they may or may not involve.]

WARNER (R.). The Principles of Public Administration. A study in the mechanics of social action. London: Pitman, 1947. 8½". Pp. vii + 212. 15*s*.

[Should there ever be a Society for the Prevention of Cruelty to Book Titles this volume by "Richard Warner" deserves its early attention. The book has such an attractive title, not without sales value, that one takes it up with expectancy. It does not take very long to discover that its more honest title, after the Victorian model, would be "Some animadversions on sundry aspects of the vague subject called public administration with copious references to sundry other works, complete with bibliography and index." Actually only one chapter is devoted to "principles." According to Mr. "Warner" (a pseudonym for some Civil Servant, higher clerical or legal, at a guess) there are eight principles. Thus the principle of social necessity (No. 3) is "Social action is impossible without administrative action, which is therefore part of its cost" and the principle of efficiency (No. 4) is "Public Administration must apply the principle of increasing rationality to the conduct of public affairs." To show how muddled it all is compare two of his references to the third so-called principle: ". . . the Principle of Social Necessity, which has been seen to be essential to justify the work of all the units of public administration, has no application in its strict sense to the units of business enterprise" (p. 134) and "in a society which depends for existence upon the division of labour there can be no grounds for regarding any one sectional occupation as inherently more necessary than another" (p. 32). As for the other principles such as "of evolution and progress" (No. 7) and "of research" (No. 8)—it is difficult to take the book seriously.]

American.

BOULDING (K. E.). Economic Analysis. New York: Harper Bros., 1948. 8½". Pp. xxvi + 884.

[A revised edition of a text-book which has been widely adopted in England as well as the United States. Considerable changes have been made both in content and organisation. The book is now divided into four parts instead of two. Part I (Demand and Supply) corresponds with the first twelve chapters of the first edition. Part II (Macro-economics) now consists of seven chapters, considerably expanded and almost wholly rewritten from the last five chapters of Part I of the first edition; the concepts of flows of production, income, expenditure, savings and the like are much more fully developed, and the economic relationships and balances made clear; the broader impacts of government are also explained at this point. Part III (The Marginal Analysis) is essentially unchanged from the elementary chapters of the original Part II: minor corrections and improvements have been made. Part IV (More Advanced Analysis) consists of the advanced chapters of the same Part, substantially revised, particularly in the chapters on the theory of consumption, and with a new chapter on applications of indifference curve analysis. Finally there is a new appendix on the literature of economics.]

CAMPBELL (R. F.). The History of Basic Metals. Price Control in World War II. New York: Columbia University Press (London: Geoffrey Cumberlege), 1948. 9″. Pp. 263. 18*s*.

[To be reviewed.]

CARLÉ (C.). Medicine Man's Mission: from primitive clans to United Nations. New York: Psycho-sociological Press, 1948. 8″. Pp. 128. $2.50.

[A hotch-potch of iconoclastic knock-about which hits nonsense and sense on the head indiscriminately. "In the days of primitive Societies it was the task of the medicine man to organise and, if necessary, to enforce through taboos the societal control. To-day his function has remained essentially the same, but has been institutionalised in various forms of religious and secular authorities, among which the authority of the national state has become the decisive one." The purpose of this book is to de-bunk that modern version.]

CARLSON (R. E.). British Block Grants and Central-Local Finance. Baltimore: Johns Hopkins Press, 1947. 9″. Pp. 222. $2.50.

[To be reviewed.]

CREAMER (D.) and CREAMER (HENRIETTA L.). Gross Product of Puerto Rico, 1940–1944. Rio Piedras: Editorial Universitaria, University of Puerto Rico, 1948. 8½″. Pp. 79.

[For the year ending June 30, 1944, the aggregate income of the island is estimated at $483 million and the gross insular product at $591 million. Of this, consumers' expenditure amounted to $445 million, government expenditure in goods and services to $171 million (the greater part being war expenditure by the U.S. Federal Government) and gross capital expenditures to $10 million. The adverse balance was $58 million leaving a discrepancy of $23 million, less than 5% of the total. Over the period 1940–44 the aggregate real income rose by 61% or 50% on a *per capita* basis. Consumers' expenditure rose by 22% or 13% on a *per capita* basis. Net domestic capital expenditure on fixed assets was a small positive figure at the beginning of the period and a small negative one at the end. Throughout the "external balance" was adverse.]

ELLIS (HOWARD S.). A Survey of Contemporary Economics. Philadelphia: Blakiston Company, 1948. 9″. Pp. xiv + 490. $4.75.

[To be reviewed.]

FLINK (S. J.). The American Economy. A functional analysis of economic principles and practices. New York: Dryden Press, 1948. 9½″. Pp. xviii + 746. $4.75.

[The purpose of this text-book is stated to be twofold: "to give the student a thorough grounding in economy theory and principles, and . . . to integrate the theoretical analysis with the actual operation of our American economy." It starts with the foundations of the U.S. economy, and the nature of capitalism. It goes on to the theory of production, touching on division of labour, capital equipment, location, the relation of cost to scale, forms of organisation, labour supply, and then demand and marketing. The next section deals with price structure and policies under competition, monopolistic competition and monopoly (the marginal-cost and marginal-revenue techniques are exploited). Next comes money, its functions, credit, monetary systems, gold, paper currencies and recent U.S. developments; banking (with discussion of U.S. commercial banking and the Federal Reserve System), and the problems of price stabilisation; all this section is in the older tradition. Finally a section on national-income analysis: the national income itself, the share of labour, interest, and the reward of capital, rent, profits. While the book has several points of interest, the very fact that it is specially designed to integrate theory with U.S. application makes its suitability for English conditions more doubtful.]

HANNA (F. A.), PECHMAN (J. A.) and LERNER (S. M.). Analysis of Wisconsin Income. New York: National Bureau of Economic Research, 1948. 9½″. Pp. xviii + 261. $3.50.

[To be reviewed.]

HOOVER (E. M.). The Location of Economic Activity. New York and London: McGraw-Hill, 1948. 9″. Pp. xi + 310. 22*s*. 6*d*.

[To be reviewed.]

JAMES (MARQUIS). The Metropolitan Life. A study in business growth. New York: Viking Press, 1947. 9″. Pp. 480. $5.00.

[The Metropolitan Life Insurance Company was incorporated in 1868. This volume is a history of its progress to date. It is claimed that it is now the biggest business in the world, with investments of $7·5 billion and immense ramifications into many economic and social fields.]

KIMBALL (JANET). The Economic Doctrines of John Gray, 1799–1883. Washington, D.C.: Catholic University of America Press, 1948. 9″. Pp. viii + 162.

[To be reviewed.]

LANDAUER (C.). Theory of National Economic Planning. Revised edition. University of California Press (Cambridge University Press), 1948. 8½″. Pp. viii + 274. 22*s*. 6*d*.

[A revised edition of a book that was reviewed by Mr. Tress in the ECONOMIC JOURNAL of June 1948.]

LANDIS (P. H.). Rural Life in Process. New York and London: McGraw-Hill, 1948. 9″. Pp. xix + 538. 24*s*.

[A second edition of a book first published in 1940. Part I deals with the structure and organisation of rural life in the U.S., with individual chapters covering such problems as the trend of urbanisation, the pattern of rural society, the demographic composition and fertility of the rural population. Part II goes on to social experience and personality formation, discussing the culture patterns of rural life. Part III is concerned with the interaction processes of a dynamic society, including isolation, mobility, rural migration, urban-ward migration, the reverse city to farm movement, social differentiation and control. Part IV deals with social institutions in a changing culture, as they touch the family, the school, the church and rural government. Part V goes on to emerging problems of a dynamic society, such as the farm youth, farm tenure, social aspects of farm labour, welfare institutions, rehabilitation and health.]

LAUTERBACH (A.). Economic Security and Individual Freedom. Can we have both? Ithaca, New York: Cornell University Press, 1948. 8½″. Pp. 178. $2.50.

[To be reviewed.]

LESTER (R. A.) and SHISTER (J.). Insights into Labor Issues. New York and London: Macmillan Company, 1948. 8½″. Pp. x + 368. 20*s*.

[To be reviewed.]

MILLER (R. J.). 40 Years After: Pius XI and the Social Order. St. Paul, Miss.: Fathers Rumble and Carty, Radio Replies Press, 1947. 9″. Pp. xvi + 328. $3.75.

[This is a factual commentary on the Encyclical *Quadragesimo Anno*. Each paragraph of the Encyclical is printed with short notes drawing attention to the circumstances and implications of the paragraph. It specifies the governments, men and movements treated in the Encyclical and applies the teaching to current problems and situations.]

MILLS (F. C.). The Structure of Postwar Prices. Occasional Paper 27. New York: National Bureau of Economic Research, 1948. 9″. Pp. 59.

[This Occasional Paper of the National Bureau argues that the advances in unit prices in different parts of the U.S. economy have been very different, so that the rewards of different producing and consuming groups and the terms on which they exchange their products are very different from those existing before the War. The chief gainers are farmers and forest producers. Manufacturing labour has increased its input by about 80%, and has more than doubled its real

rewards. The rate of increase on industrial efficiency has, however, been well below the average of the last quarter century. But the gain in total production has no historic parallel, and has been a major protection against extreme inflation.]

MUND (V. A.). Open Markets. An essential of free enterprise. New York and London: Harper, Bros., 1948. 8″. Pp. xi + 272. $3.00.

[To be reviewed.]

NATIONAL PLANNING ASSOCIATION. Planning Pamphlets No. 63. *The Guaranteed Annual Wage*, by A. Calder and J. L. Knipe. Washington, D.C.: National Planning Association, 1948. 7½″. Pp. 38. 50 cents.

[The literature of the guaranteed annual wage grows rapidly. There has been a steady increase of such schemes since 1893, and in 1945 there were 196 plans in operation. But the total coverage was only about 61,000 workers. Over half were in retail or wholesale trade and only 7 in heavy industries, where variations of employment and income are most significant. While plans would appear to have succeeded reasonably well in ironing out seasonal variations, it is not very clear that they have yet been effective in the face of serious cyclical and secular variations. The pamphlet, while putting the economic case for stable incomes, draws attention also to the difficulties and risks of preventing change and technical economies and does not come down strongly either for or against the scheme.]

PAUL (R. W.). California Gold. Harvard University Press (London: Geoffrey Cumberlege), 1948. 8½″. Pp. xvi + 380. 25*s*.

[To be reviewed.]

REINOLD NOYES (C.). Economic Man in Relation to his Natural Environment. 2 vols. New York: Columbia University Press (London: Geoffrey Cumberlege), 1948. 9½″. Pp. xiv + 1443. 82*s*. 6*d*.

[To be reviewed.]

ROOVER (R. DE). The Medici Bank: its organization, management, operations, and decline. New York: University Press, 1948. 10″. Pp. xv + 98. $4.00.

[Several books have been written on the Medici Bank. The present book, as the author says in his Introduction, is an attempt to correct the defects of earlier works, to give an accurate account of the organisation and the management of the Medici Bank, to examine the nature of its business, and to investigate the causes of its decay under the disastrous administrations of Lorenzo the Magnificent. The method used is the same as that which would be used in the analysis of the structure, the policies, and the history of a modern business. There are a number of well-printed illustrations.]

ROSS (A. M.). Trade Union Wage Policy. Berkeley and Los Angeles: University of California Press, 1948. 9″. Pp. viii + 133. $3.00.

[To be reviewed.]

SAMMONS (R. L.) and CESTERO (BELEN H.). Balance of External Payments of Puerto Rico, 1942–1946. Rio Piedras: Editorial Universitaria, University of Puerto Rico, 1948. 9″. Pp. 65.

[This study is complementary to that of the Gross Product of Puerto Rico by Mr. and Mrs. Creamer, noted above. The figure given above for the external balance needs further clarification, since it excludes the main credit item consisting of U.S. Federal Government expenditures. In the first study this treatment is counterbalanced by the inclusion of the U.S. expenditures in Government expenditure on goods and services, though these figures do not seem to add up as they should. On the usual definition there was not an adverse but a favourable balance in each year. Doubts, however, are expressed about the picture, since the great decline in Federal Government expenditure would seem inevitably to involve a corresponding decline in real consumption (or income) of the Island. On the basis of annual data for 1930–42 the marginal propensity to import is

estimated at a little less than ½. The years 1943–45 show imports well below the normal relationship, but imports in 1946 were close to an extrapolation of the regression line. The studies can be recommended to all interested in the economy of Puerto Rico and as worthy of imitation in other territories.]

SAMUELSON (P. A.). Foundations of Economic Analysis. Harvard Economic Studies No. 80. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1948. 8½″. Pp. xii + 447. 42*s*.

[To be reviewed.]

SCOVILLE (W. C.). Revolution in Glassmaking. Harvard University Press (London: Geoffrey Cumberlege), 1948. 9″. Pp. xi + 398. 27*s*. 6*d*.

[To be reviewed.]

Wage Drives and the Outlook for Tomorrow. Washington, D.C.: Chamber of Commerce of the United States, 1948. 9″. Pp. 20.

[A popular pamphlet on the thesis of too much money chasing too few goods and the dangers of increases of money incomes without increases of supplies.]

WALKER (E. R.). The Australian Economy in War and Reconstruction. New York: Oxford University Press (London: Geoffrey Cumberlege) (Royal Institute of International Affairs), 1947. 9″. Pp. ix + 426. 30*s*.

[To be reviewed.]

French.

FLORIN (R.). Dynamique Économique. Soissons: Imprimerie Saint-Antoine, 1948. 9½″. Pp. 115. 500 fr.

[To be reviewed.]

GANNAGÉ (E.). La Réforme des impots directs au Liban et en Syrie. Paris: Librairie du Recueil Sirey, 1947. 10″. Pp. x + 641.

[The author, a graduate of the University of Beyrouth, shows the great changes in the fiscal methods of Syria and Lebanon precipitated by the needs of war finance.]

GARAVEL (J.). Les Paysans de Morette. Un siècle de vie rurale dans une commune du Dauphiné. Paris: Librairie Armand Colin, 1948. 9½″. Pp. 122.

[A detailed historical study of a Dauphiné village, which goes back a hundred years or so in many cases and shows the economic, social and demographic changes which have taken place.]

GOETZ-GIREY (R.). La Pensée Syndicale Française, militants et théoriciens. Paris: Librairie Armand Colin, 1948. 9½″. Pp. 173.

[To be reviewed.]

MAYER (C.). L'Économie au service du progres. Paris: Marcel Rivière, 1948. 8½″. Pp. 412. 390 fr.

[" Existe-t-il un système économique qui, conforme a l'idéal de progrès exposé par l'auteur dans un ouvrage précédent, puisse poursuivre son objet essentiel, le progrès, sans restreindre les libertés individuelles de chacun et sans qu'l soit nécessaire d'avoir recours à une vaste bureaucratie omnipotente qui finit par n'avoir plus d'autre objet que sa propre perpétuation et sa propre glorification ? " This is the question the author discusses through the mouths of a certain Néon and his questioners, Durand, who is a conservative; Ecarlat, a syndicalist; Smith, an American; and John, an Englishman.]

Dutch.

STOKVIS (H. J.). Bretton Woods en het Internationaal monetair bestel. Leiden: Stenfert Kroese, 1948. 8½". Pp. 448. F. 12.75.

[A doctoral thesis in which a vast amount of information is clearly and systematically marshalled. It is arranged in three main chapters. The first is devoted to an exposition of the theory of the Gold Standard. The second is concerned with the development of the Gold Standard between the two wars. This part deals successively with the various conferences, reports, etc., "which serve as milestones"; in other words, the author deals with the Brussels Conference, the Genoa Conference, the Report of the Gold Delegation and the MacMillan Report. The third chapter opens with a comparison of the thought of Irving Fisher and Keynes, and proceeds to the Keynes and White Plans, which along with the Bretton Woods proposals are analysed in detail. There is a brief concluding chapter, and various appendices (including the Bretton Woods text) are added.]

TINBERGEN (J.). Beperkte Concurrentie. Leiden: H. E. Stenfert Kroese, 1946. 9". Pp. 152. F. 6.50.

[To be reviewed.]

Swiss.

KUNG (E.). Die Selbstregulierung der Zahlungsbilanz. St. Gallen: Verlag der Fehr'schen Buchhandlung, 1948. 9½". Pp. x + 256. S. fr. 25.

[To be reviewed.]

WYTTENBACH (E.). Die wechselseitige Konjunkturabhängigkeit von Landwirtschaft und Industrie in den USA, 1919–1941. Berne: A. Francke, 1947. 9". Pp. 250. S. fr. 28.

[To be reviewed.]

German.

Die Friedensverträge von 1947 mit Italien, Ungarn, Bulgarien, Rumänien und Finnland. Oberursel: Verlag Europa-Archiv, 1948. 11½". Pp. viii + 212.

[This prints the Peace Treaties with Italy, Hungary, Bulgaria, Roumania and Finland in parallel columns of English and German. The Treaties themselves are prefaced by an introduction (in German) by Dr. Eberhard Menzel of the University of Hamburg.]

GROTIUS (F.). Methodik, Ergebnisse und Erfahrungen der bisherigen Währungsreformen in den europäischen Ländern nach dem letzten Kriege. Kiel: Institut für Weltwirtschaft, 1947. 7½". Pp. 74.

[This book is of the first post-war crop of the once famous and now regenerated *Institut* at Kiel. Its bedraggled make-up is eloquent of the difficulties under which it must have been produced; so is the statement on p. 2 that the book was written "with the help of the information and text of laws available to the library of the Institute." It consists mainly of brief case studies of monetary reforms in the countries of Europe (excluding the U.S.S.R.); the author includes even Sweden, where there has been no monetary reform in the narrower sense (for which the author tends to criticise Swedish policy). In general, the "Marshall countries" are dealt with in more detail than the East, but there is an interesting section on the astronomical Hungarian hyper-inflation (far overshadowing the German inflation of 1923) followed by a currency cancellation so severe that the value of the existing notes circulating could not even be expressed in terms of the new currency. Belgium comes out as somewhat less of an example of heroism than is popularly accepted. The interesting point is made that the success of monetary reform at the crucial moment depended on the relief action of the

Allied armies. Denmark has coined the expressive term "spinster money" for excessive money supplies. The work is competent, but visibly hampered at times by an inhibition freely to criticise other countries. The author's final summing up is cautious. Monetary reform is an essential but insufficient pre-condition of economic recovery. Attempts to reduce note-circulation to pre-war levels are ill-judged and futile. The effect of monetary reform on prices, wage rates and black markets is only limited; so is the possibility of hitting tax evaders and owners of "hot money." These are sobering conclusions, but the material collected by the author provides strong support for them.]

MUZIOL (R.). Europäische Aussenhandelsverflechtung und Marshall-Plan. Oberursel: Verlag Europa-Archiv, 1948. 11½". Pp. 72.

[Reviewed in this issue.]

Austrian.

PÜTZ (T.). Theorie der Allgemeinen Wirtschaftspolitik und Wirtschaftslenkung. Vienna: Verlag für Geschichte und Politik, 1948. 9". Pp. 318.

[To be reviewed.]

Italian.

CIPOLLA (C. M.). Studi di Storia della moneta. Part I. I movimenti dei cambi in Italia dal secolo XIII al XV. Pavia: Libreria Internazionale A. Garzanti, 1948. 9½". Pp. 218. 750 l.

[This is a study of the fluctuations of the exchanges (in most cases between gold and silver coins) in various Italian cities in the last centuries of the Middle Ages. Extensive tables give series of rates derived from manuscript sources not previously published.]

DEMARIA (G.). Principi Generali di Logica Economica. Milan: Edizioni CEA, 1945. 9½". Pp. 484. 450 l.

[This is a treatise on the methodology of economics and at the same time a reconsideration of pure economic theory. The author regards as inadequate the traditional approach based on the logic of the differential calculus, and in the preface he outlines his object as follows: "It is necessary to apply to economics other logical methods, such as finite and discontinuous synthetic logic, which considers the whole and not only the separate parts; and probability logic in general." These methods have already been fruitfully applied to the study of dynamic problems and this work is an attempt to apply them to the analysis of instantaneous exchange. The author's essays on indeterminacy have previously been criticised as being contrary to Thomistic philosophy (and for this reason publication of one of them was prevented), but he regards these criticisms as arising from "theological prejudices which constantly recur in economics as in other sciences."]

SANTARELLI (A.). La disciplina degli impianti industriali. Padua: Cedam, 1947. 10". Pp. viii + 156. 800 l.

[A reprint of articles on Government control of new industrial establishments under Fascism.]

Swedish.

OLIVECRONA (K.). Ideologie und Realität des Geldes. Lund: C. W. J. Gleerup, 1948. 10". Pp. 48. 3 kr.

[English edition to be reviewed.]

Czech.

Czechoslovak National Insurance. A contribution to the pattern of social security. Prague: Orbis, 1948. 8″. Pp. 213.

[An account in English of the Czechoslovak national insurance act which was published on May 15, 1948. The first part of the volume is an introductory survey of the objectives and principles by Evžen Erban, Minister of Social Welfare. The second is a translation of the act itself.]

Official.

BRITISH.

Department of Reconstruction and Supply. Disposal and Peacetime Use of Crown Plant Buildings. Ottawa: King's Printer and Controller of Stationery, 1948. 9½″. Pp. 47.

[This gives an account of the investment in Canada in war production facilities in Crown Plants, the procedure for post-war disposal, and of the extent to which buildings have been retained permanently by the Crown, have been sold to private industry, dismantled or remain for disposal.]

Government and Industry. A survey of machinery for consultation and co-operation. London: H.M. Stationery Office, 1948. 8½″. Pp. 32. 9*d*.

[This is designed to set out the various bodies that exist to provide for consultation and co-operation between Government and industry. It records the terms of reference of each body, the intervals of meetings, the type and sources of membership (but not as a rule the names of individual members) and the means of approaching the body. It does not attempt any critical appraisal of the work of the various bodies.]

Registry of Friendly Societies. Co-operative Societies. Statistical Summary, 1937–1947. London: H.M. Stationery Office, 1948. 13″. Pp. 2. 3*d*.

[The membership of the retail societies had reached nearly 9·8 million by 1947 and total assets nearly £389 million. The assets of wholesale and productive societies were £211 million.]

AMERICAN.

Midyear Economic Report of the President, transmitted to the Congress July 1948. Washington: United States Government Printing Office, 1948. 9″. Pp. 109.

[This report stresses the continuing high level of employment, the rising national product and the growing dangers of inflation, and calls for the adoption of the anti-inflationary programme submitted by the President to Congress.]

WOYTINSKY (W. S.). Principles of Cost Estimates in Unemployment Insurance. Washington: United States Government Printing Office, 1948. 9″. Pp. xii + 174.

[To be reviewed.]

INTERNATIONAL.

Bank for International Settlements. Eighteenth Annual Report, 1st April 1947–31st March 1948. Basle: Bank for International Settlements, 1948. 12″. Pp. 174.

[To be reviewed.]

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